American MARCH • 1948

FRUIT GROWER

Here is What it Would Take to Make This Tire Pull... Like the—

Firestone CHAMPION GROUND GRIP

Plug Up Broken Center Traction Leaks
Connect Bars and Eliminate Trash Catchers
Make Bars Higher for Deeper Bite
Make Bars Longer for Bigger Bite
Open Mud Pockets at Shoulder for Better Cleaning
Curve Bars for Wedge-Like Center Bite Pulling Force
Brace Bars for Strength, Eliminate Loose End Body-Breaking Action, Reduce Excessive Wear
Firestone
CHAMPION GROUND GRIP
U.S. PAT. NO. 2 324 976

BECAUSE OF FIRESTONE PATENTS FEW, IF ANY, OF THE ABOVE ADVANTAGES COULD BE INCORPORATED IN THE OPEN CENTER TIRE ABOVE. THUS THE FIRESTONE CENTER BITE, TRIPLE-BRACED TREAD CAN ONLY BE IMITATED, IT CANNOT BE DUPLICATED.

• • •

FARMERS have asked why the Firestone Champion Ground Grip is the only tire with connected, Triple-Braced traction bars.

The Firestone Champion Ground Grip tread cannot be duplicated because it is patented. It is the patented, connected, center bite tread design that gives the Firestone Champion Ground Grip these advantages . . .

- **UP TO 100% MORE EFFECTIVE CLEANING**
- **UP TO 62% MORE DRAWBAR PULL**
- **AS MUCH AS 91% LONGER LIFE**

And because the Ground Grip tread is Triple-Braced, the traction bars can be made higher, stronger . . . to take a deeper, more powerful bite — a "center bite."

When you order a new tractor or replacement tires for your present tractor specify Firestone Champion Ground Grips.

The Only Tire That Takes A "CENTER BITE"

Copyright, 1948, The Firestone Tire & Rubber Co.

Try CHAMPION GROUND GRIPS
LET THE TEST TELL THE TRUTH

AMERICAN FRUIT GROWER

Entered as second class matter at Post Office at Cleveland, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Ill.

WHAT IS IMPORTANT in the spray materials you use on your trees? To start with, good wetting, mixing and suspension qualities. But what really *pays off*, is having spray materials go on the fruit and foliage with an unbroken protective film and without heavy run-off of the active insecticide or fungicide. This means that the fine particles must "stay put" where they hit.

YOU CAN ALWAYS count on getting these qualities in Orchard Brand spray materials. That's because General Chemical develops every spray it produces to meet these requirements. And, they must be proved in Research and in the field before they go to you!

FOR RELIABLE SPRAY materials that pay off in cleaner, better fruit at picking time, specify Orchard Brand sprays.

GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.
Offices Serving Principal Agricultural Centers Throughout the Nation

Orchard Brand Spray Materials for the Fruit Grower includes:

GENITOX* S50
Micro-particle 50% Wettable DDT Powder

GENITHION†
(Parathion) Miticides

MICRO-DRITOMIC* SULFUR
Advanced type of sulfur fungicide of micron fineness

PURATIZED* AGRICULTURAL SPRAY
Organic fungicide for early protection against Apple Scab

BHC PRODUCTS
Benzene Hexachloride Wettable Spray Materials

LEAD ARSENATE
Astringent and Standard

FILMFAST*
Spreader-Sticker

STAFAST*
Pre-Harvest Drop Control

NICOTINE SULFATE

*Reg. U. S. Pat. Off. †General Chemical Trade Mark

NEW ALL THROUGH! FORD *Bonus Built* TRUCKS

BUILT STRONGER TO LAST LONGER!

NEW FORD ½-TON PICKUP

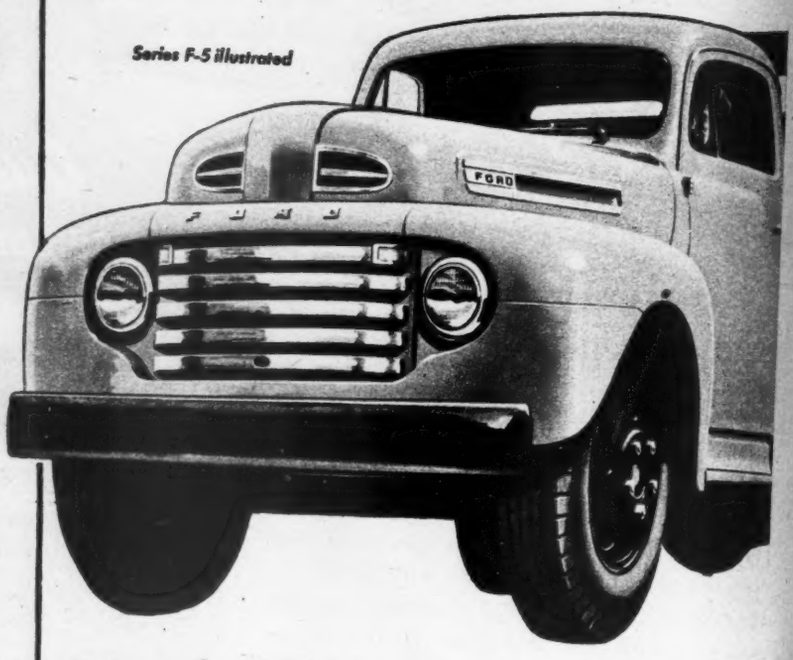
6½-ft. body length. 114-in. wheelbase
G.V.W., 4700 lbs.

- ★ ***NEW*** Rouge 226 Truck Six or new Rouge 239 Truck V-8 power choice!
- ★ ***NEW*** Million Dollar Cab gives you living room comfort. New Level Action suspension insulates cab from vibration and frame weave.
- ★ ***NEW*** longer frame has greater rigidity.
- ★ ***NEW*** Feather-Foot Brakes are 11-in., self-energizing hydraulics.
- ★ ***NEW*** Front Axle with heavy duty steering and direct-acting shock absorbers.
- ★ ***NEW*** Synchro-Silent Transmission, with new synchronizing mechanism, new gear ratios.
- ★ ***NEW*** Rear Axle, semi-floating, with hypoid drive. Integral type for easy servicing.
- ★ ***NEW*** worm and needle bearing steering gear, for new handling ease.

You'll find these and scores of other big advancements in the new Ford Pickup for '48! It's Bonus Built for wider use, longer life!

Listen to the Ford Theater over NBC stations Sunday afternoons 5:00 to 6:00 p. m., Eastern Standard Time.

Series F-5 illustrated



Bonus Built* — THE AMAZING RESULT OF AN ENGINEERING PRINCIPLE THAT ASSURES WIDER USE, LONGER LIFE . . . and ONLY Ford Trucks have it!

Every one of the new Ford Trucks for '48 is Bonus Built . . . built with *extra strength* in every vital part. This extra strength provides WORK RESERVES that pay off for you in two important ways:

- **FIRST, these WORK RESERVES give Ford Trucks a *greater range of use* by permitting them to handle loads beyond the normal call of duty. Ford Trucks are not limited to doing one single, specific job!**
- **SECOND, those same WORK RESERVES permit Ford Trucks to relax on the job . . . to do their jobs easier, with less strain and less wear. Thus, Ford Trucks *last longer* because they work *easier*!**

Yes, Ford Trucks are Bonus Built . . . built stronger to last longer! That's why they give their owners wider use and longer life! That's why there are more Ford Trucks in use today than any other make!

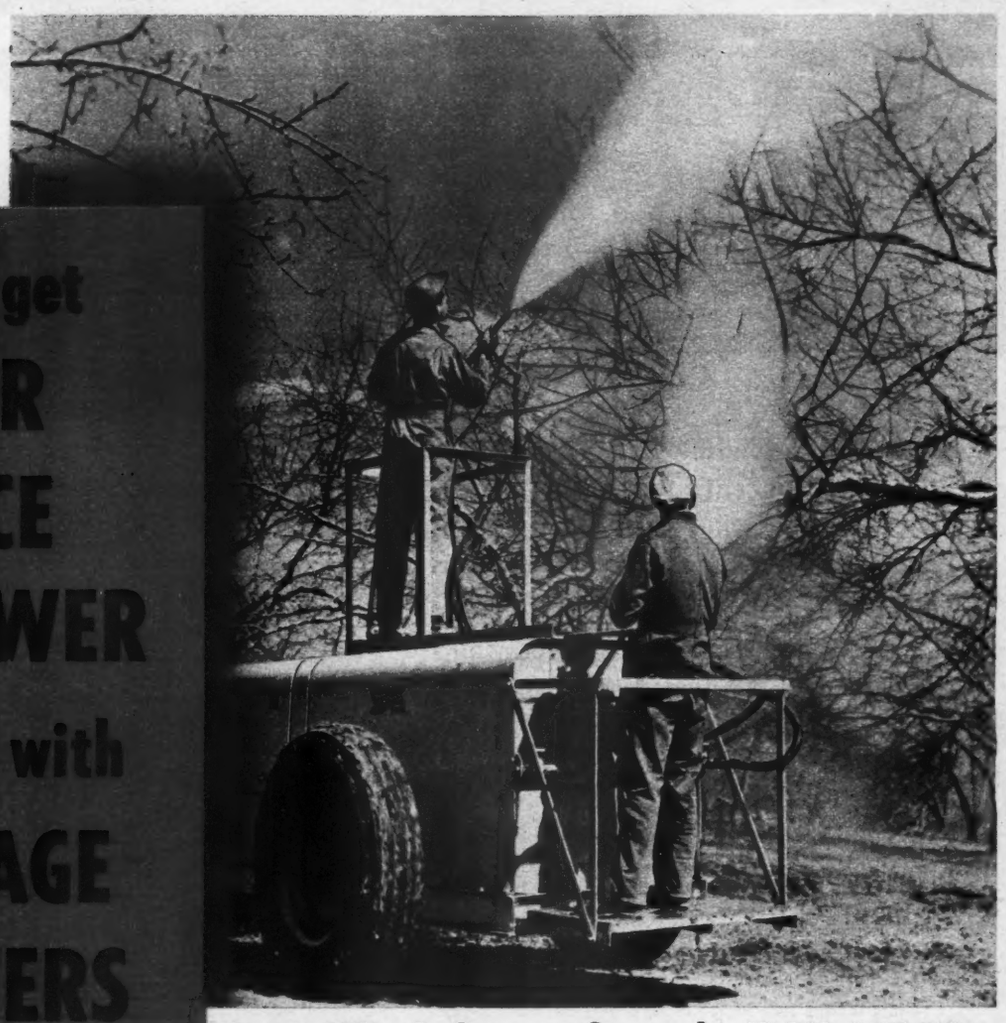
*BONUS: *"Something given in addition to what is usual or strictly due."*
—Webster's Dictionary

THEY'RE here . . . they're revolutionary! The finest line of trucks in Ford history!

More than 139 chassis-body combinations! Three new engines! New Million Dollar Cab! New frames, axles, brakes, steering!

See the new Ford Bonus Built Trucks now. You'll find the *right* truck for your needs in the new Ford line.

LIFE INSURANCE EXPERTS PROVE . . . FORD TRUCKS LAST UP TO 19.6% LONGER!



Growers get LONGER SERVICE and LOWER COSTS with IRON AGE SPRAYERS

Here's Why It Pays to Spray the IRON AGE Way

NO TIME out for repairs . . . little need for servicing of any kind . . . *that's what pays off* for growers who spray the Iron Age way.

One North Carolina apple grower reports only $1.65 spent in repairs on his Iron Age Sprayer Pump in 3 years. Another grower says, "Sprayed over 155 acres the full season without putting a wrench to my pump . . . ," and an Oregon orchardist claims, "Iron Age saves me money because I never have any pump trouble."

The heart of your sprayer—*the famous Iron Age Pump*—maintains the high pressures needed for complete, thorough coverage. Rugged, easy-running . . . it takes a beating season after season without breakdowns. Eight sizes, 6 to 50 gallons-per-minute capacities, for working pressures up to 1000 lbs. per square inch.

Farquhar Iron Age builds long-life sprayers in all sizes and capacities to meet the demand of every profit-minded orchard, grove or vineyard operator. See your Iron Age Dealer *now* about the Iron Age Sprayer—or Duster—*you* need, or write for FREE information to: A. B. Farquhar Co., *Farm Equipment Division*, 3425 Duke St., York, Pa.

Protect Fruit at Low Cost with IRON AGE DUSTERS

Iron Age High Velocity Orchard Dusters are built in all capacities and sizes to provide quick, low cost crop protection. Precision-built, high-speed blower runs easily, delivers strong accurate dust blast that assures complete penetration. Power take-off and engine-driven models for orchard and grove use. Write for FREE Iron Age Duster Bulletin.

Farquhar

IRON AGE

FLO-SUL 70
SULPHUR PASTE

NOW AVAILABLE—A NEW SULPHUR FOR EFFECTIVE SCAB CONTROL

● A non-hardening, easy to handle, highly concentrated sulphur paste conveniently packaged in 200 lb. drums lined with a waterproof — airtight PLASTIC BAG.

This revolutionary package maintains the paste in a "factory fresh" condition —facilitates easy removal from the drum.

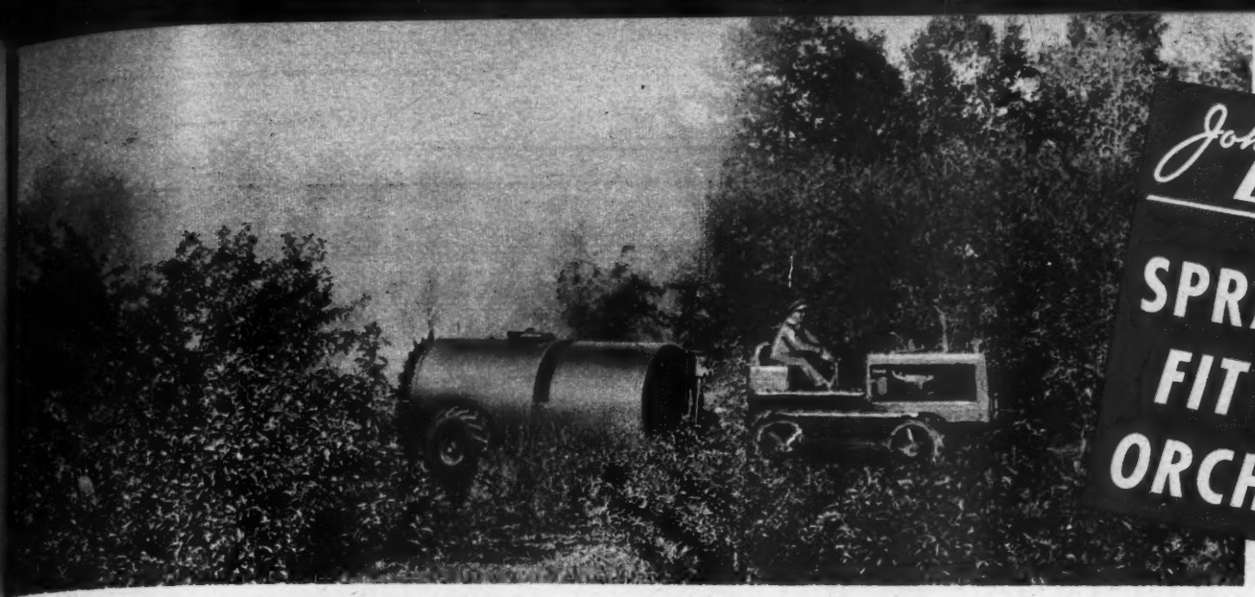
1. **PARTICLE SIZE**—Extremely fine sulphur particles—averaging 5 microns—resulting in effective scab control without nozzle clogging.
2. **HIGH SULPHUR CONTENT**—FLO-SUL 70 contains a high percentage of active sulphur fungicide—"70%"—this means less water to ship and handle—grower saves due to higher concentration of ingredients.
3. **NON-HARDENING**—Because of the newly designed "double package," FLO-SUL 70 will not harden due to loss of water by evaporation. The sulphur paste is packed in a waterproof, airtight PLASTIC BAG which becomes the inner liner of the sturdy fibre drum. The sulphur paste always maintains its original creamy consistency.
4. **WATER SEPARATION**—Because of the unique process of manufacture, water cannot separate from the sulphur.
5. **FREEZING**—FLO-SUL 70 will not be injured by cold weather.
6. **CONVENIENT CONTAINERS**—FLO-SUL 70 is packed in a rugged 200 lb. fibre drum with steel ends—top and bottom. There are no nails to pull or wooden covers to split. Top is easily removed and replaced by simple adjustment of retaining ring. Inner plastic bag may be re-closed to preserve unused portion of paste.
7. **WETTABILITY**—FLO-SUL 70 wets immediately when placed in the spray tank—disperses well—assuring uniform distribution both in the tank and on the fruit.

MICROSUL

For those growers who prefer a dry micro fine wettable sulphur, we recommend MICRO-SUL. This product has been widely used over a period of years and is a favorite among leading fruit growers.

Investigate these superior products—just drop a postcard to:

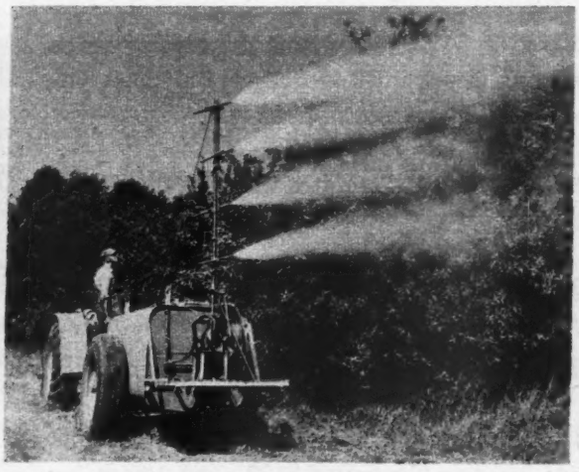
CENTRAL CHEMICAL CORPORATION OF MD.
FARMRITE
HAGERSTOWN MARYLAND



John BEAN SPRAYERS FIT THE ORCHARD

SPEED SPRAYER SPEEDS OPERATIONS AT MARTIN ORCHARDS. "In 1947 we purchased one Speed Sprayer and one re-filler unit," reports W. L. Thenell of Martin Orchards, Inc., Sturgeon Bay, Wis. "This speeded up our operations to where we covered approximately 1200 acres of cherries in four days, and cut spraying time about one half day." As a result of this 1947 test, Martin Orchards, Inc. has ordered an additional ***Speed Sprayer*** and re-filler for 1948.

These Martin Orchards men, Driver Richard Harlay, Orchard Manager, Otto Mielke and W. L. Thenell, Treasurer and Manager, discuss the operation of their 1947 Speed Sprayer. The quicker, thorough coverage which they obtained has led to the purchase of a second Speed-Sprayer for the 1948 season.



NEW AUTOMATIC SPRAY MASTS by John Bean are now available. These masts are equipped with *guns*, not just nozzles, and have a patented swivel connection that is not only leak proof, but eliminates the need for hose connections. One man can cover up to 40 acres a day. See the new 4 and 8 gun automatic masts at your John Bean dealer.

JOHN BEAN EQUIPMENT GIVES YOU TWO-WAY PROTECTION!

The John Bean sprayer that fits your needs will give you thorough ***sure*** protection for your valuable crop. But it's equally important to protect your profits from high spraying costs, and labor-saving John Bean sprayers do that, too. This two-way protection is your assurance of a better crop and bigger profits.

Have you seen the big new 1948 John Bean Orchard Spraying catalog? *It's free, write for it. (Dept. 29)*

JOHN BEAN

DIVISION OF FOOD MACHINERY CORPORATION

LANSING 4, MICHIGAN

fmc

THE ORCHARDS OF REYNOLDS BROTHERS INC., also at Sturgeon Bay, Wis., operate 1946 and 1947 model *Speed Sprayers*. Quick *Speed Sprayer* coverage has made it possible for Reynolds Brothers to get satisfactory control of yellow leaf and scab in 1000 acres of cherries and apples. The two *Speed Sprayers* used provide two-way protection for the entire orchard — (1) Protect Crops, (2) Protect Profits.

Thiophos
TRADE MARK 3422
PARATHION

KILLS MITES, SPIDERS, APHIDS, OTHER PESTS

THIOPHOS 3422, the remarkable new basic ingredient for powerful insecticides is one of the most efficient pesticides ever offered fruit growers.

THIOPHOS 3422 kills mites which multiply when DDT is used and thus solves the serious mite problem.

ITS ACTION IS SUFFICIENTLY LONG-LASTING to effect incredibly high kills against many types of fruit pests. Yet the active ingredient is volatile leaving practically no residue at harvest.

ECONOMICAL—as inexpensive to apply as any other insecticide, because THIOPHOS 3422 is effective at remarkably small dosages. For example, only ½ lb. of 15% wettable powder makes 100 gallons of spray, for excellent control of European red mite or two-spotted mite on apples; 1 lb. of 15% wettable powder per 100 gallons will control pear psylla.

THIOPHOS 3422 mixes readily with wettable and dusting sulfurs, insoluble coppers, DDT, benzene hexachloride, rotenone, pyrethrum and lead arsenate.

LOOK FOR THIS IDENTIFYING MARK ON THE LABEL

Thiophos
TRADE MARK 3422
PARATHION

WETTABLE POWDER AND DILUTE DUSTS MANUFACTURED FROM THIOPHOS 3422 PARATHION WILL BE SUPPLIED THIS SEASON UNDER DIFFERENT TRADE NAMES BY WELL-KNOWN MANUFACTURERS.

AMERICAN CYANAMID COMPANY

Agricultural Chemicals Division

30-X ROCKEFELLER PLAZA • NEW YORK 20, N. Y.

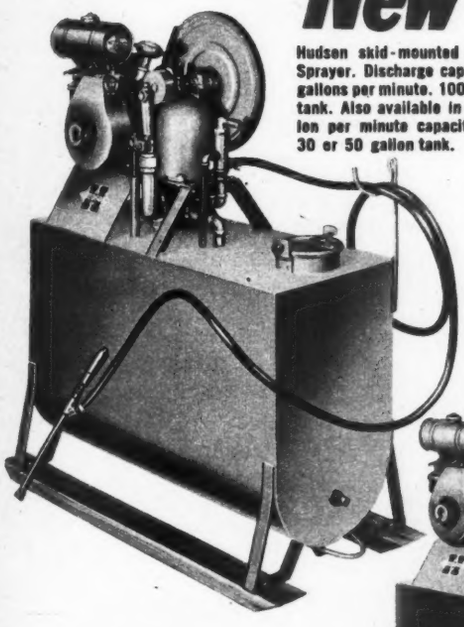
New

Improved

New

Hudson pneumatic tire Power Sprayer with trailer hitch. Discharge capacity 4 gallons per minute. 100 gallon tank.

HUDSON POWER SPRAYERS



New

Hudson skid-mounted Power Sprayer. Discharge capacity 4 gallons per minute. 100 gallon tank. Also available in 2 gallon per minute capacity with 30 or 50 gallon tank.

- **NEW Spraying Efficiency**
- **NEW Dependability of Performance**
- **NEW Ease of Handling**

You're looking at the most advanced line of power sprayers ever made. They're completely new . . . with many valuable improvements you want and need . . . and now can have.

These new Hudson Power Sprayers will apply your spray materials more efficiently than was ever before possible. Improved pumps, new agitators, new nozzles and other important features will save time and work, make spraying easier, assure trouble-free continuous operation.

You could make no better investment in labor-saving equipment than to get new Hudson Power Sprayers at the earliest possible date. Hudson is now supplying their dealers. Ask your Hudson dealer about them. Or write us for full information.

New

Hudson pneumatic tire Power Sprayer. Discharge capacity 2 gallons per minute. Available with 30 or 50 gallon tank.

ONLY HUDSON OFFERS ALL THESE FEATURES

• All-welded steel tanks • Full pneumatic tires on roller bearing steel disc wheels • Rugged, all-welded chassis • Highly efficient gasoline engine • Heavy duty pump • Full controllable pressure • Stainless steel valve assemblage • Slow speed long life pumps • Constant, positive, liquid agitation • Perfect balance assures ease of movement

Your Hudson dealer has or can get your New Hudson Sprayer promptly. See him today.

WRITE HUDSON FOR FULL INFORMATION.

© 1948 H. D. H. MFG. CO.

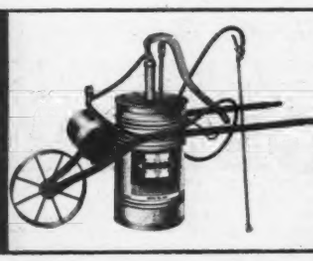
H. D. HUDSON MANUFACTURING COMPANY • 589 E. Illinois Street, Chicago, Illinois, U. S. A.

Sprayers and Dusters
Hay Tools and Barn Equipment
Livestock Equipment

HUDSON

Poultry Equipment
Farm Ventilation Equipment

TESTED AND PROVED EQUIPMENT



New

Hudson "Porta-Spray." 15 gallon capacity. With or without pressure tank. Steel, semi-pneumatic or full pneumtic wheels.

Meats and Produce STAY SALEABLE...

...with GE

REFRIGERATION EQUIPMENT

FARMERS AND FRUIT GROWERS have just as much right to pick their own marketing time as any other businessmen . . . and the idea that they can't afford the refrigeration to make this possible *has never been further from the truth!*

General Electric can help increase your sales by retarding deterioration of the weight, appearance, and harvest-time level of quality in your products until *you're ready* to market them . . . yet the overall cost of G-E equipment is well within your ability to buy . . . far more profitable than selling early at lower prices.

In addition to equipping tailored refrigerated storage jobs to meet exactly your needs, G. E. is top-notch for such other farm money- and time-savers as milk coolers, farm and home freezers, reach-in and walk-in refrigerators . . . *all* of which are designed to give you faster cooling at lower cost . . . and to add to your ultimate net profits in every way possible.

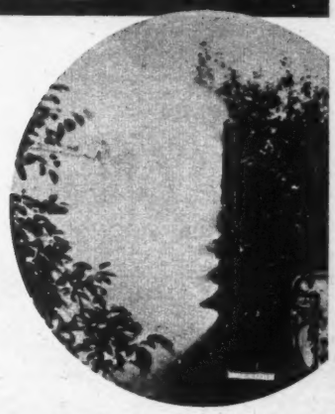
The next time you're in town talk to your G-E Dealer—after all, it's never too early to make a profit. *General Electric Company, Air Conditioning Department, Section A8324, Bloomfield, N. J.*

GENERAL ELECTRIC

Better Refrigeration

DID YOU KNOW

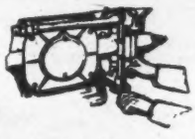
that you can buy a Sprayer like this?



NON-WEARING CYLINDER WALLS of the "Friend" Pump give you an economy that you can't match. The plungers are never in contact—so you don't have a cent of expense for relining or replacement of worn cylinders.

LONGER-LASTING PACKING—fully lubricated, and kept just tight enough by a unique adjustment. Numerous growers have worked their "Friend" Sprayers *5 years or more* with the original plungers and packing.

NO BEARING TROUBLES, as you don't find one plain or babbitt bearing on any "Friend" pump. All roller bearings, mostly Timkens—and generously oversize. Practically wear-proof.



INSTANT CLEANING OF VALVES —mighty important when you are busy spraying. With a "Friend" pump it's only a matter of *seconds* to slide out the valve—clean it—and put it back. How long does this take you on other sprayers?

and—it's the SIMPLEST pump that you can buy for high-pressure spraying . . . only 1/2 to 1/3 as many moving parts. That fact, alone, gives you a guarantee of Unequalled Dependability.

Your motor turns THIS—

which moves THIS

back and forth

There you see all the moving parts of a "Friend" pump, except for valve balls as on every sprayer. Compare these two simple sturdy units with the wearing parts you have to maintain on a sprayer of ordinary design. Then you'll see why *the Superior Design of the "Friend" Pump Pays Big Dividends to the User.*

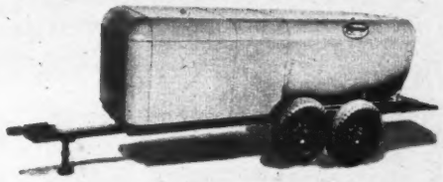
FRIEND MFG. CO.
GASPORT, N. Y.

SPRAYERS DUSTERS FRUIT SIZERS AND CLEANERS

Easiest to Maintain in Working Order--
Fewest Moving Parts
"FRIEND"

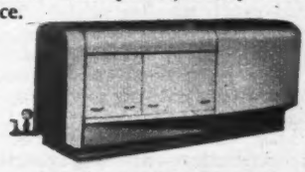
"FRIEND" SPRAY MAST gives Speed—plus the Thoroughness of Gun Spraying—at Low Cost. A big labor-saver. For small trees, the two banks of 4 guns each can be mounted opposite. Hydraulic controls make it easy to cover every tree.

There's a "Friend" Sprayer to suit your work. 3½ to 60 gal. per minute. All chassis styles . . . three of the most popular are shown below.



ENGINE-DRIVEN TRAILER. You can also get Tractor-Trailer "Friends" with pump driven by the tractor.

4-WHEEL CUTUNDER SPRAYER, complete with power, ready for instant service.



SKID MOUNTED OUTFITS, ready to place on truck and start work.

MAIL THIS COUPON

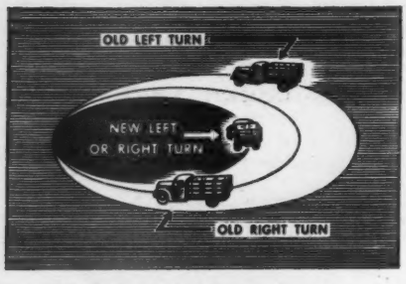
FRIEND MFG. CO., Gasport, N. Y.
Send your new Sprayer Catalog, explaining the "Friend" pump and showing all types of mountings, to

Name .....

Address .....

(I have.....acres of.....)
(Kinds of Fruit)

ONLY DODGE OFFERS YOU ALL THESE NEW *Truck Features*



1 EASIER HANDLING— SHORTER TURNING

You can turn these new *"Job-Rated"* trucks in much smaller circles. This is due to a new type of steering, in combination with shorter wheelbases. Front axles have been moved back and engines forward, placing more of the engine and cab weight on the front axle. You get much better weight distribution—steering is easier.

2 ALL-WEATHER VENTILATION . . . MORE COMFORT

Year-'round *comfort* is assured by an ingenious combination of fresh air intake, newly designed water *truck* heater, defroster tubes, vent windows, and cowl ventilator. New weight distribution, wider tread axles, and adjustable "Air-O-Ride" seats produce a wonderful new "cushioned ride." 7 inches of seat adjustment.

3 248 BASIC *"Job-Rated"* MODELS

Every unit of every Dodge truck, from engine to rear axle, is *"Job-Rated"* for economy, dependability, performance, and long life. 248 *different* basic chassis and body models, engineered for gross vehicle weights up to 23,000 lbs., and gross train weights up to 40,000 lbs.

NEW DODGE *"Job-Rated"* TRUCKS

...and only Dodge builds "Job-Rated" trucks!

MARCH 1948

VOL. 68 No. 3

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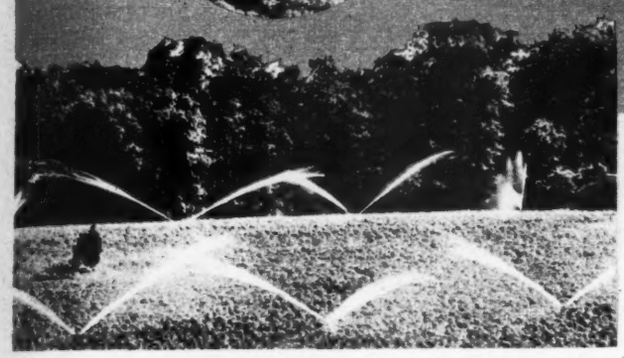
[PRINTED IN U.S.A.]

GET THE DROP ON DROUTHS

Now Portable Sprinkler Irrigation is both Practical and Economical with

REYNOLDS ALUMINUM RIGID IRRIGATION PIPE



Portable Sprinkler Irrigation, using REYNOLDS ALUMINUM Rigid Irrigation Pipe, is both protecting and improving crop values on hundreds of farms today.

ACTUALLY 30 to 50 percent greater crop yield on a low-cost investment that pays dividends year after year—that's what you can expect from a portable sprinkler irrigation system. And the use of REYNOLDS ALUMINUM Rigid Irrigation Pipe assures maximum benefits at the lowest possible cost.

Here's why—

SO MUCH LIGHTER—Reynolds Aluminum weighs only ⅓ as much as steel pipe. One man can carry two twenty-foot lengths without difficulty . . . saves time for other crop tending.

SO MUCH STRONGER—REYNOLDS ALUMINUM Rigid Irrigation Pipe is stronger than any other aluminum pipe now used for irrigation. It's resistant to high pressure, weather and rough handling in the field.

SO DURABLE—You'll use it year after year because Reynolds Aluminum Pipe is rustproof and corrosion resistant.

SO UNIFORM—Friction loss is reduced and even pressures are attained. Perfectly round makes for easier, faster connections.

If you want to eliminate crop losses—improve crop yields, get all the facts now! Consult your irrigation equipment dealer.

FREE! . . .

INFORMATION ON PORTABLE IRRIGATION

Get this helpful "tell how" booklet explaining the benefits of Portable Sprinkler Irrigation. Mail your request to Reynolds Metals Company, Aluminum Division, 2037 South Third Street, Louisville 1, Ky.

REYNOLDS METALS COMPANY, Aluminum Division, Louisville, Ky.

REYNOLDS *Lifetime* ALUMINUM

REYNOLDS' PIONEERING MADE ALUMINUM COMPETITIVE . . . TAKE ADVANTAGE OF IT!

KILL WEEDS IN SOD-MULCH ORCHARDS WITH

AGRICULTURAL WEED-NO-MORE

TRADE MARK

A Proven Ester Formulation of 2,4-D

GET EFFECTIVE LOW-COST WEED CONTROL WITH ONLY 1 TO 2 PINTS PER ACRE

Won't Harm Sod. The new "hormone" weed killer, Agricultural Weed-No-More, now gives you a practical, low-cost way to clean weeds out of orchard sod, without harming the grass.

At the same time, you can effectively kill weeds in fence rows and corners, along ditches, canals, and around packing houses and other farm buildings.

Faster, Easier. Spraying Agricultural Weed-No-More on the orchard floor is faster than mowing, and it gets weeds and vines under trees . . . that must otherwise be scythed. Weed-No-More on mature tree *trunks* will not damage the trees.

Many weeds such as plantain, dandelion, mustard and honeysuckle are easily killed with one treatment.

Control Poison Ivy, Thistles and other troublesome, resistant perennials such as elderberry, grape, woodbine—as well as bushy weeds like sumac, sassafras, locust and willows. These more resistant weeds may require re-treatment.

Agricultural Weed-No-More, because it penetrates weed leaves almost instantly, does not require the presence of moisture on the weed leaves. Thus it is effective in non-humid areas where other types of 2,4-D may fail.

Weed-Free Sod. Under all conditions, particularly in shade which increases resistance to 2,4-D, Agricultural Weed-No-More, a *proven* ester formulation of 2,4-D, is highly effective. Applied in spring, when weed growth is young and succulent, it will eliminate weeds that rob trees of moisture and fertility, get rid of noxious vines, reduce cost of mowing, and prevent interference by tall weeds in spraying and picking operations.

AGRICULTURAL WEED-NO-MORE

Costs less per acre because it controls weeds more effectively!

Agricultural authorities find that the ester forms of 2,4-D used in Agricultural Weed-No-More penetrate weed leaves within 5 minutes, won't wash off, mix completely with water, won't clog or corrode equipment, and are harmless to stock. Agricultural Weed-No-More has been *proved* on more than 500,000 acres.

ACME WHITE LEAD & COLOR WORKS, DETROIT
W. W. LAWRENCE & CO., PITTSBURGH
THE LOWE BROTHERS CO., DAYTON
JOHN LUCAS & CO., INC., PHILADELPHIA
THE MARTIN-SENOUR CO., CHICAGO
THE SHERWIN-WILLIAMS CO., CLEVELAND

Free Bulletins. See your farm supply or insecticide dealer for bulletins on Agricultural Weed-No-More . . . *and on the new low-gallonage spray method*, especially applicable to orchard weed spraying. Or write direct to Agricultural Chemicals Division, 1247 Midland Bldg., Cleveland 1, Ohio.

New Sound-Color Movie. Ask your county agent, vo-ag teacher, or supply dealer to arrange for you and your neighbors to see "Agriculture's New Conquest." The complete story of weed control on farms with 2,4-D—in natural color with 16mm sound.

PRODUCT OF SHERWIN-WILLIAMS RESEARCH

LETTERS TO THE EDITOR

Signs Help Sales

Dear Sir:

By using a carefully planned and tended set of signs on the highway by our gate, we have been able to dispose of a great deal of fruit and garden produce in our own back yard, thus saving the inconvenience and necessity of maintaining a roadside stand.

The signs are made from boards 30 inches long and 8 inches wide. These are hung within a frame, which has screw-eyes suspended from the top. An arrow points to the driveway. Each sign has two hooks in the top and two screw-eyes in the bottom, so that they hang one beneath the other. When one product is sold out, it takes only a moment to remove that particular board. At first we painted all of the boards white and lettered them neatly with black paint. Later we learned the value of having contrasting color to catch the eye of the approaching motorist. Now we have some black boards lettered with white paint, as well as the white boards lettered with black. A bright red board lettered in white hangs at the bottom and invites the potential customer to "Drive In".

We have our fruit and produce neatly displayed in a small open-front building under the shade trees in the back yard. Tourists, especially, like to get off the highway for a few moments, rest where it is cool, and drink quantities of cold spring water. Having our stand in the back yard leaves me free to pursue my duties in the house or adjoining garden without having to tend the stand continually as I would if it were on the road.

Our back yard is large enough to accommodate several cars at once, with ample room for them to turn around. As soon as some one product is sold out we are careful to take down the sign immediately, and whenever we are away from home, even for a short time, we take down all the signs. Customers appreciate this, as they do not care to be invited to "drive in" for produce which is not available. It is also important to have a definite price set on each article, and to have correct change on hand at all times. It goes without saying that products are always of good quality.

In home sales of produce, as in any other business, it pays to be business-like and courteous.

Bigfork, Mont. Mrs. Mildred Kelso

Application of Sodium Nitrate

Dear Sir:

I have not been in the fruit business very long, so I am not acquainted with certain phases of fruit growing. Can you please tell me when and how much nitrate of soda I should put on my apple and peach trees?

New Albany, Ind. Elmer F. Watkins

Early spring (March or April) is the best time to apply this fertilizer. It is difficult to state the exact quantity that should be applied, since that depends largely upon the soil, the cultural system followed, and other factors. However, approximately ¼ pound of nitrate for each year of the apple tree's age is the amount usually applied. About 1/3 pound is recommended for peaches.—Ed.

Scion Storage and Old Varieties

Dear Sir:

Here is how I prepare grafting scions. I hope the information will be helpful to Reader Smith of Independence, Mo.

In the fall I work up a small plot of deep, fine soil on the shady side of a building. Over this I turn, up-side-down, one or two large stone jars or any other air-tight containers.

I cut the scions any time in winter where they are not frozen, tie them into bundles, label them and stick the cut ends about two inches deep in dirt under the jars. All kinds of grafts and cuttings keep fine this way here in central West Virginia, even until late grafting time.

With reference to your inquiry about the Rusty Coat apple, I am attempting an orchard of fine old fruits and nuts which seem to be disappearing for different reasons. I will appreciate hearing from anyone who could supply a few grafts of some of these fine old varieties which are being forgotten. I believe someone, somewhere, should keep these alive.

Oxford, W.Va. Harvey H. Shepler

Information on Old Varieties

Dear Sirs:

I would like to know if you can tell me where I could buy Romanite apple trees.

Atkinson,Ill. Peter A. Van Herzeele, Jr.

Finding these old varieties is always a problem, for they have dropped behind commercially and most nurserymen no longer grow them. The Committee on Fruit Gardens of the American Pomological Society has been formed to help growers of these old varieties, and such information may be had by writing Wesley P. Judkins, Ohio Agricultural Experiment Station, Wooster, Ohio.—Ed.

Eureka!

Dear Sir:

I would like to advise your subscriber who wrote in the December issue about the Rusty Coat apple that we have this variety at our nursery. It is grown under the name of English Russet or Golden Russet and is not a commercial variety. It is popular for home use, however. We do not propagate it extensively but just enough to keep the variety alive.

Buskley, Wash. W. M. Schwab

Cold Storage Literature

Gentlemen:

I like your seasonal subject arrangement in AMERICAN FRUIT GROWER. I am interested in building a cold storage and would like to pick up more knowledge about its construction. Is there any available literature on this subject?

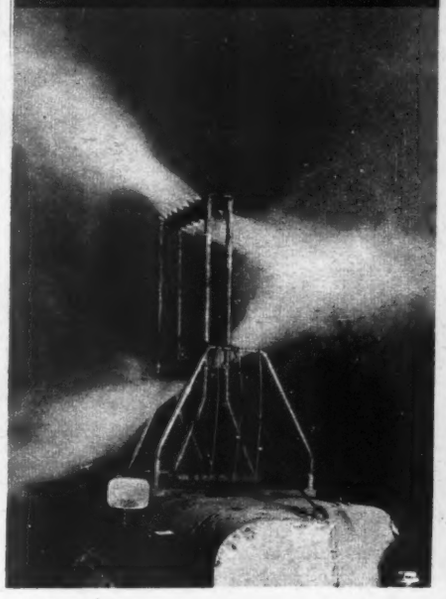
Mohrsville, Pa. Herman C. Long

Many of the companies who manufacture storage equipment and insulation materials will send you literature on cold storages.

An excellent booklet on this subject is "Cold Storage for Apples and Pears" by W. V. Hukill and Edwin Smith. It is USDA Circular 740, and may be had by sending 15 cents to the Superintendent of Documents, Washington 25, D.C. Your own Pennsylvania Agricultural Experiment Station, State College, Pa.; the Cornell Agricultural Experiment Station, Ithaca, N.Y.; and the Ohio Agricultural Experiment Station, Wooster, Ohio, also have good material on storage construction.—Ed.

TRAVERSE BOOMS

THE AUTOMATIC SPRAYING UNIT



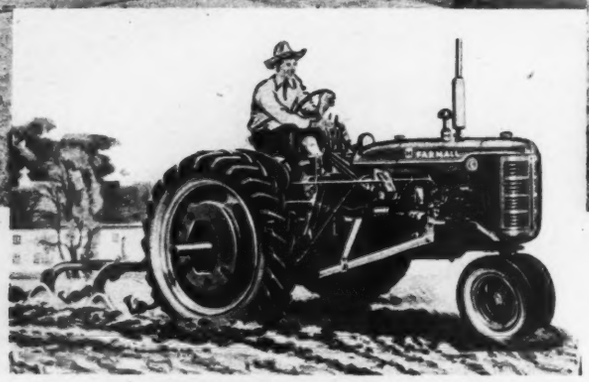
TRAVERSE BOOMS, WITH THEIR AUTOMATIC ACTION AND LABOR SAVING FEATURES, ARE SOLVING THE FRUIT GROWERS' PROBLEMS AND INCREASING IN POPULARITY FROM MAINE TO CALIFORNIA, AND IN CANADA.

THE SWEEPING ACTION OF THE ADJUSTABLE NOZZLE-TUBES PROVIDES A PENETRATING SPRAY, AND THE INSTANT CONTROLS ENABLE THE TRACTOR DRIVER TO USE JUST THE AMOUNT OF SPRAY NEEDED FOR TREES OF VARYING SIZES, SAVING COSTLY MATERIAL. A CALIFORNIA GROWER REPORTS SAVINGS OF SEVENTY PERCENT IN LABOR COSTS, WITH LESS SPRAY MATERIAL. TRAVERSE BOOMS ARE AVAILABLE IN THREE MODELS FOR ALL MAKES OF HIGH PRESSURE SPRAYERS. SEE YOUR LOCAL DEALER OR WRITE TO

GRAND TRAVERSE ORCHARD SUPPLY CO., INC.
TRAVERSE CITY, MICHIGAN
PACIFIC COAST GROWERS WRITE TO RUEL R. STICKNEY, UKIAH, CALIF.

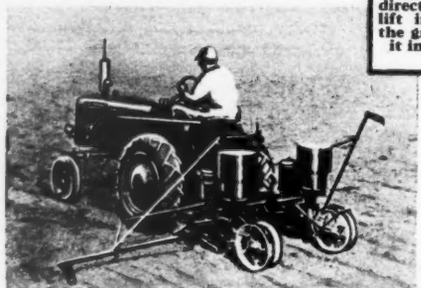
Spring on the Farm—

and NEW IH Equipment for Modern Farming

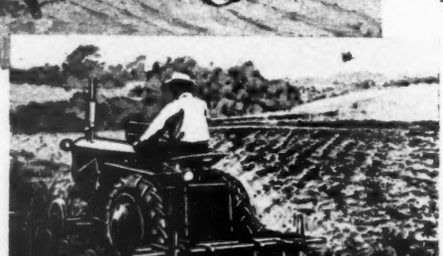


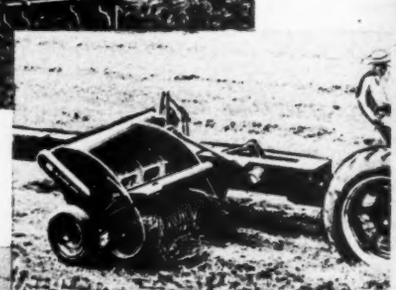
New Farmall C, equipped with FARMALL TOUCH-CONTROL . . . one of five all-purpose tractors with matched machines for every size farm, and for every crop and soil condition.

Farmall Touch-Control is a *complete* implement control. Hydraulic power in both directions — power to lift implement from the ground and force it into the ground.



← New FARMALL SUPER-A tractor equipped with drill planter and fertilizer attachment. Farmall is a registered trade-mark. *Only* International Harvester builds Farmall Tractors.





Smallest Farmall—the new FARMALL CUB tractor, with cultivator. This is a great combination for fast cultivation. →

↑ Speed up the hay harvest with the new No. 45 Pickup Baler. Self-feeding, fully automatic. . . . Farmall H (or tractor of equivalent power) handles it nicely. No auxiliary engine needed.

← The new, small No. 4-E hammer mill to be powered by a 3, 5 or 7½ hp. electric motor or the Farmall Cub Tractor. Handles all types of grains and feed. Ideal for overhead bin installations.

It's Spring, 1948 . . . and new International Harvester Farm Machines are out in the fields, all over America.

What an array of new IH equipment it is! *Every machine is the leader in its field,* made by International Harvester, pace-setter in farm equipment manufacture. Every machine has been designed and built to make farm mechanization more complete and to bring additional time and labor-saving advantages to the family farm. These machines are as up-to-date as tomorrow. They fit today's *way of farming,* with the emphasis on *soil conservation* and *better land use.* They're made for simple, convenient one-man operation.

Your IH Dealer is the man to see about all that's new in IH Farm Equipment. Every effort will be made to provide you with the machines you need.

INTERNATIONAL HARVESTER COMPANY

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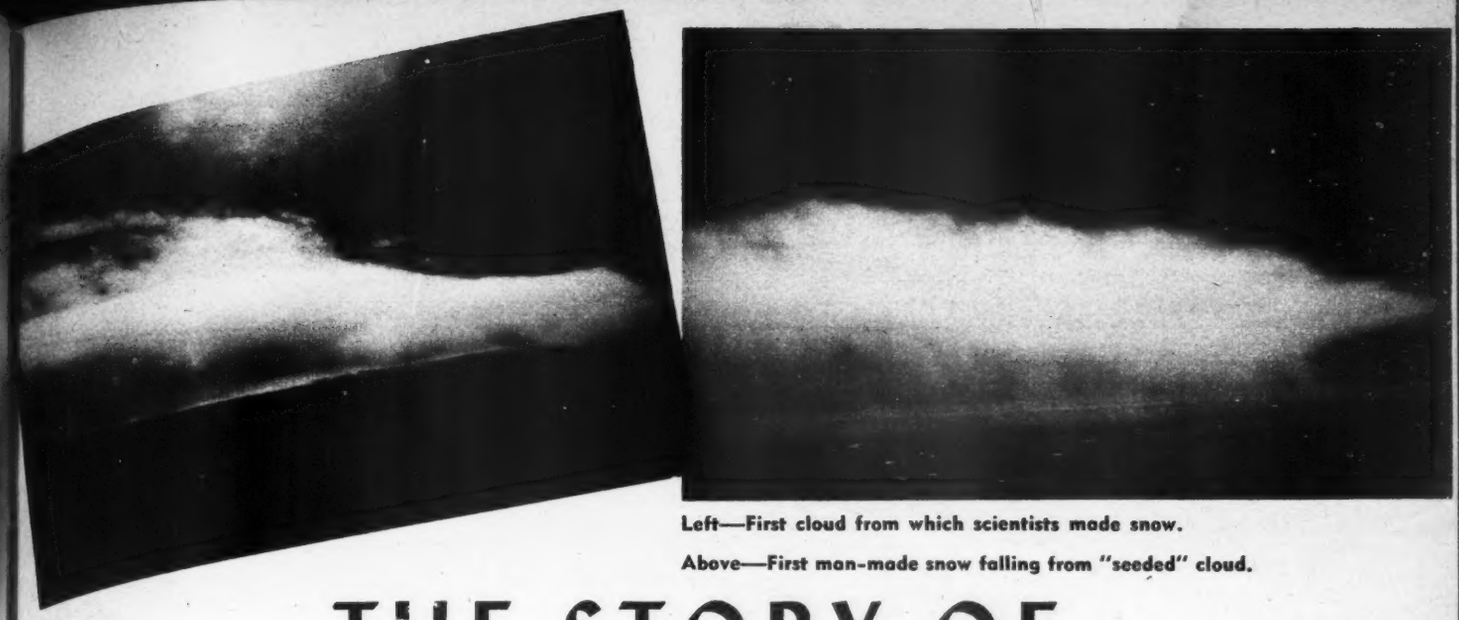
INTERNATIONAL HARVESTER

Leader in Farm Equipment Progress



Left—First cloud from which scientists made snow.

Above—First man-made snow falling from "seeded" cloud.

THE STORY OF MAN-MADE WEATHER

By VINCENT J. SCHAEFER

SINCE THE TIME that some of our ancestors first found that a rude shelter and a campfire afforded a degree of protection from snow, cold air, wind, rain and lightning, man has sought ways to overcome the discomforts of "bad" weather. Slowly, he has discovered ways to surround himself and his family with controlled "weather" in the form of warm homes, air-conditioned stores, heated water, well-lighted rooms, and hosts of other things which make life less rigorous.

While these conveniences tend to make us less dependent on the sort of weather doled out by Mother Nature, the farmer, in particular, has always been at the mercy of the weather. Ice storms, drought, torrential rains, lightning, high winds, floods, erosion, dust storms, hail, frost, and excessive heat or cold combine singly, or sometimes in rapid succession, to complicate and sometimes completely ruin the results of a season of hard work.

Considering these factors, it is little wonder that soon after man emerged from his primitive existence and started to recognize the uncertainties of weather, he tried to discover ways to manipulate the weather to better satisfy his needs. Long before recorded history, he learned that when rain failed to come it was sometimes possible to irrigate, and thus use precipitation, which occurred earlier in the season, to help mature his crops. He sometimes resorted to less direct methods which often led to a considerable abuse of logic and reason. Thus, the medicine man, the rainmaker, and similar types of individuals appeared on the scene, flourished while lucky, and then faded from the picture as less credulous critics raised pointed questions about their activities and the results. How then, with such a background of uncertainty, prejudice, skepticism and ambiguity, can we properly evaluate the last year's activity in the realm of rain and snow making?

There are several factors which make the present activities exciting, to say the least. For the first time, scientists from many different fields are combining forces in an attempt to wrest from the atmosphere the secrets that Nature, heretofore, has guarded jealousy. Man is probing far into the stratosphere with rockets laden with all kinds of precise instruments; he is discovering, with sensitive radio, fascinating things about the ionized layers which probably have much to do with the weather patterns of the world. With radar he can now plot "contour" maps of precipitation areas in clouds. Supersensitive seismographs let him chart the movements of hurricanes many hundreds of miles away, and by means of elaborate flight programs, he has probed the structures of thunder storms and watched the shift from supercooled clouds to snow and rain areas by precise and quantitative seeding operations.

Astronomers, physicists, chemists, meteorologists, radio engineers, hydrologists, seimologists, mathematicians, and hosts of others are, today, using all sorts of instruments to unravel the mysteries of our planet and its weather. It will be surprising, indeed, if we do not make vast strides within the next few years in reaching a better understanding of the weather, its vagaries, and its trends and patterns.

About The Author

Vincent J. Schaefer is General Electric Company's research scientist who first "seeded" clouds with dry ice from an airplane and produced snow. The startling results of his experiment opened hitherto undreamed opportunities for controlling the weather. In this article, Schaefer gives the facts as they are known today, and also looks into the future regarding this new line of weather research.

In the last year we have acquired a better understanding of clouds and cloud systems. We have learned that profound changes can be produced wherever Nature permits unstabilities to develop. We have advanced our knowledge of some of the phenomena which are part of the natural weather cycle so that we are better able to evaluate results which follow artificial seeding activities. That a profound change can be induced in an unstable cloud system by proper seeding techniques is now well-established.

To illustrate one phase of cloud modification techniques which has been followed with a considerable degree of success during the last year, let us mention the use of dry ice. This is solid carbon dioxide, a common substance having a temperature of —78.5°C, available in most parts of the country, and costing less than five

(*Continued on page* 40)

SPRING WEATHER?
WET OR DRY, WARM OR COLD

By DR. IRVING P. KRICK, *California Institute of Technology*

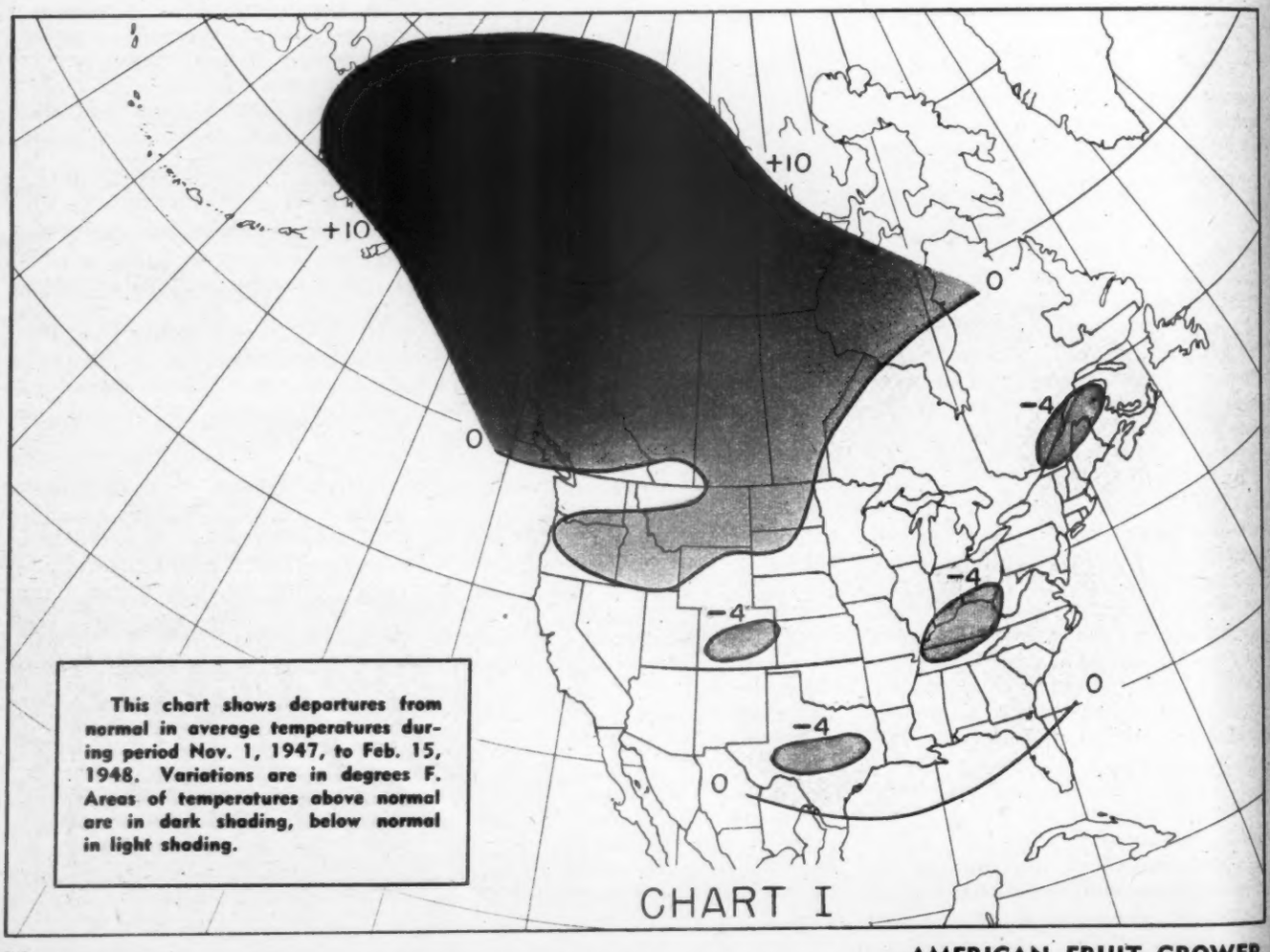
IN MANY RESPECTS the American fruit grower is dependent for his livelihood upon the vagaries of the weather. This aspect of his life has been brought into sharp focus by weather conditions in many parts of the country during the last year. There have been areas in California where continued drought has been a menace to water supply. Severe cold has touched every citrus area in the United States this winter. Cold and floods last spring caused untold damage.

It is probable that man's attempts to control the weather by the artificial stimulation of clouds to produce rain, will reach fruition during the next decade. At the present time applications of this technique to the fruit growing industry cannot be clearly defined.

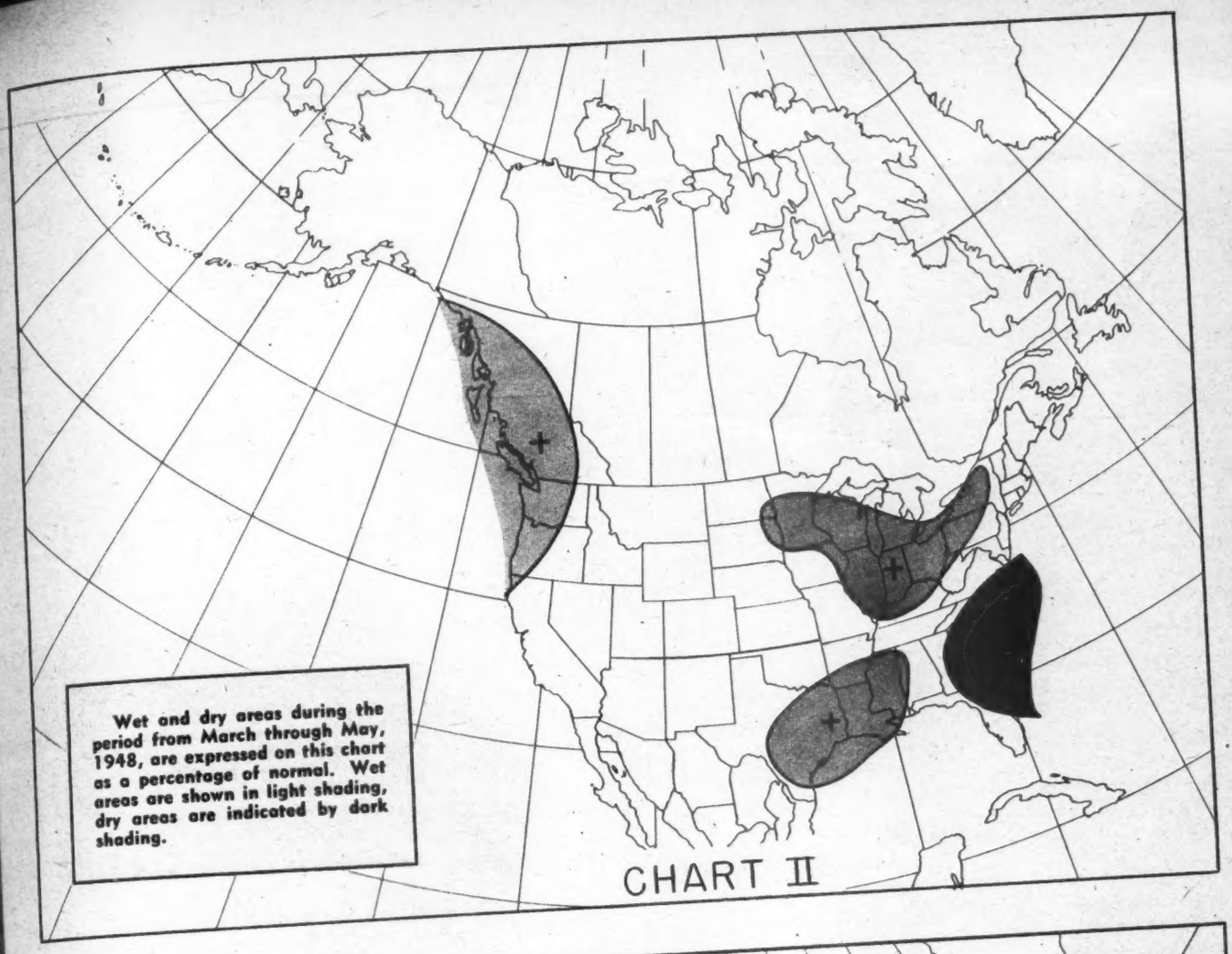
There seems to be little doubt that climates have changed in the past with profound effects upon civilization; however, it is probably safe to say that no changes in climate which can greatly affect our economy will occur during the next few centuries because all evidence available indicates that variations of this magnitude take place very slowly.

At present it is much more important to develop estimates of the month to month or year to year swings in weather which may have a profound effect upon the future fortunes of the individual fruit grower. A sufficiently long record of the atmospheric circulation over the northern hemisphere has been available in a suitable form for an attack upon some of the more elusive elements of this problem only since World War II. During the war, an archive of 50 years' daily weather charts for the entire northern hemisphere was prepared. This material was required as a basis for the preparation of strategic weather studies and for the development of long range operational weather forecasts. It has now become available for use in peacetime research and development. The study of these records by meteorologists at the California Institute of Technology has revealed that the atmospheric circulation exhibits a limited number of configurations which recur constantly. This has permitted a day-by-day classification of the 50-year record in terms of the limited number of basic circulation patterns which have been discovered. Floods, frosts, high winds, and other critical weather elements have been related to these patterns. By cataloguing the weather processes for the period of record, it is possible to re-

(*Continued on page* 35)

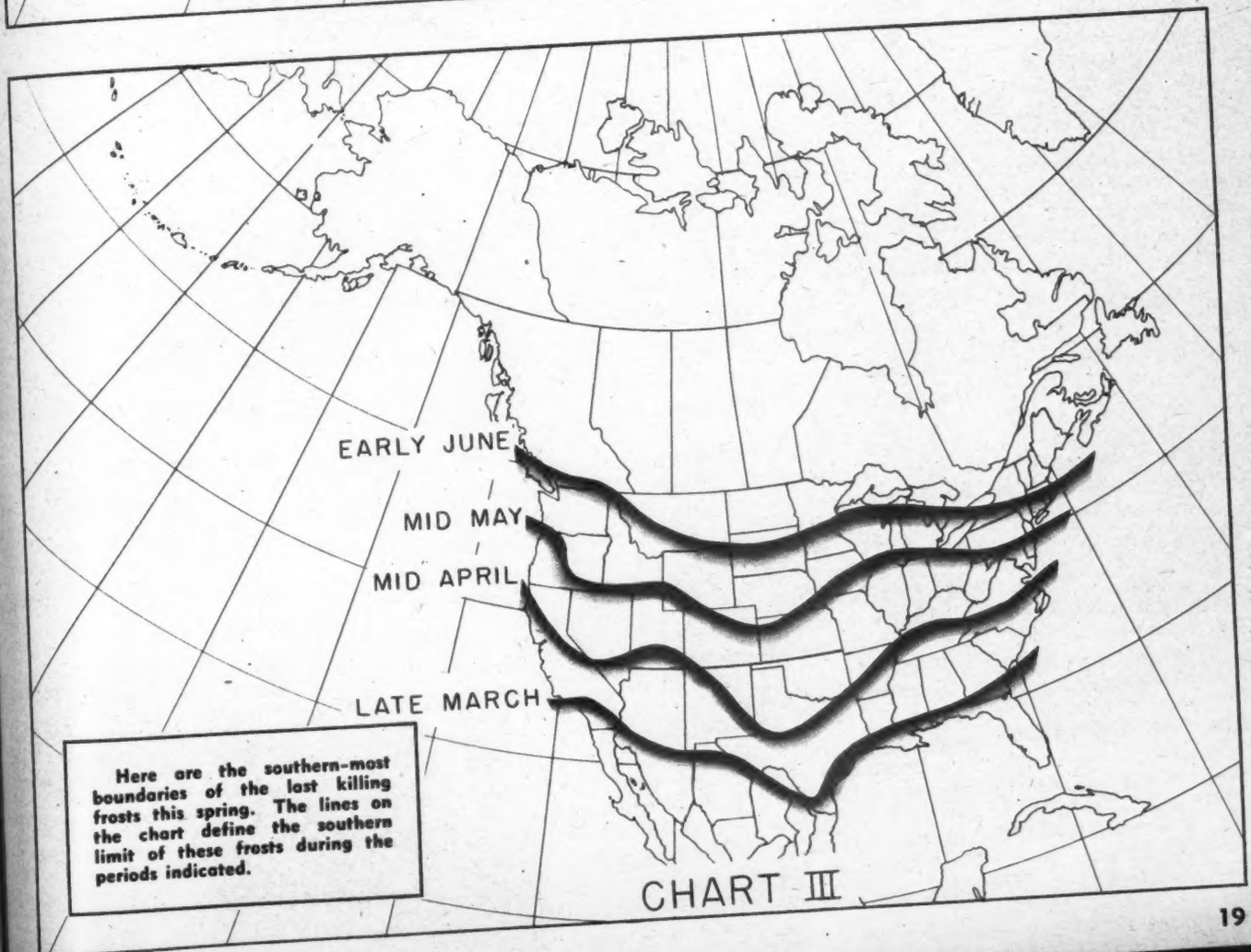


This chart shows departures from normal in average temperatures during period Nov. 1, 1947, to Feb. 15, 1948. Variations are in degrees F. Areas of temperatures above normal are in dark shading, below normal in light shading.



Wet and dry areas during the period from March through May, 1948, are expressed on this chart as a percentage of normal. Wet areas are shown in light shading, dry areas are indicated by dark shading.

CHART II



Here are the southern-most boundaries of the last killing frosts this spring. The lines on the chart define the southern limit of these frosts during the periods indicated.

CHART III

RADIO AN
Combine To B

By RA PALME

RADIO IS HELPING fruit growers keep one jump ahead of the weather along Lake Ontario in Monroe County, New York, and its quickness in spreading special weather warnings to the growers is proving invaluable in that region. Now information vital to preventing an apple scab infestation can be spread simultaneously to hundreds of growers so that the timing of their sprays will be just right. By means of specially prepared scripts, the speed of radio broadcasting is bringing these growers up-to-the-minute information and warnings that help them stop many orchard diseases before infections become serious.

At the beginning of this century methods of insect and disease control in horticulture were primitive, and the value of timing spray applications had not yet been fully recognized. However, when the weather and other conditions of 1916 proved favorable for severe apple scab infection in western New York state, the importance of proper timing of spray applications for its control was strikingly demonstrated in a few orchards where applications had been correctly timed. This created so much interest that, in 1917, a fruit spray information service was begun, with a system of relaying spray warnings by telephone. Finally, however, the inadequacy of the telephone relay led the Monroe County fruit committee to consider the possibility of using the radio for getting out to the growers last minute information that could not be adequately conveyed by mail or telephone. Tom Murray, Farm Program Manager for radio Station WHAM in Rochester, offered to cooperate in making radio time available for such a fruit spray information service. Meteorologist Major B. L. Wiggin of the Buffalo office of the Weather Bureau agreed to provide a special forecast adapted to the needs of the spray service in Monroe County.

The Fruit Committee felt that through the use of the radio it would be possible to attain more accurate timing, to take advantage of later and more comprehensive weather information, and to avoid sporadic failure of the telephone service. It also would eliminate the danger of garbled messages where the information is successively relayed by a number of individuals. The radio broadcast would make available to every grower a considerable amount of very timely and detailed information that could not be relayed to him by telephone.

As finally worked out, the program includes a continuation of the regular fruit spray service letters of the old information service, and the radio is used to supplement them with information too fast-breaking to permit its useful dissemination by mail. All pertinent information is collected during the day and written up in radio script for use the next morning. At 5:45 a.m. the detailed weather report is obtained by phone from Buffalo, the forecaster adding to the special forecast any additional data requested by the writer. This report is written up in script and any spray recommendations suggested by the weather forecast are prepared for radio presentation. At 6:30 a.m. every week-day morning of the spraying season, this material is put on the air from the writer's field office at Hilton in the heart of the western New York fruit belt by special wire to Station WHAM in Rochester. No definite amount of time is set aside for the broadcast, which varies in length with the material to be presented.

For example, for apple scab, which is a major problem in the area, detailed information is secured from the weather forecaster on the probability of shower periods, time of beginning and ending of such periods, whether precipitation will be continuous or intermittent, amount of rainfall expected, extent and char-

Here Are Excerpts From Ralph Palmer's Radio Scripts

May 20, 1946

Our weather information comes from a forecast made in Buffalo this morning especially for the fruit belt along Lake Ontario.

Rain is expected to start falling the middle of this afternoon, continuing into the night; followed by light drizzle during the remainder of the night. The total rainfall will be light, perhaps a quarter of an inch. Conditions should become favorable for drying shortly after sunrise tomorrow. Temperatures today will reach a high of 70 degrees, falling to a low of 50 degrees tonight.

Winds today will be easterly at first, shifting to southerly, and then westerly by morning. Wind speed about 15 to 20 miles per hour.

Tomorrow, Tuesday, will be sunny with good drying conditions and southwest winds at 15 to 25 miles per hour. Temperatures will reach 60 to 65 degrees Tuesday, falling to 45 to 50 degrees at night.

Thursday should be much the same but a little warmer.

The rain starting today should produce some 15 to 18 hours of wetness at an average temperature of about 55 degrees. This would permit a moderate to severe apple scab infection. Sulfur spray applied before today's rain, or sulfur dust or elemental sulfur spray put on during the first ten hours of wetness, should give full protection against this infection. There have been several periods of weather favorable to pollination and a sulfur dust or mild sulfur spray applied now should have little or no deleterious effect on fruit setting. Since there are still many blossoms in full bloom, lead arsenate should not be included in these applications.

May 27, 1946—APPLE SCAB

. . . The present rain period should end by mid-morning followed by good drying weather this afternoon. . . . With good drying cool weather forecast for this afternoon and the next few days, any scab infection occurring in this rain period could be checked with a liquid lime sulfur spray up to 60 to 70 hours from the start of the rain period, or until tomorrow night or some time Wednesday. . . .

May 28, 1946—CURCULIO

. . . With warmer weather forecast for the last of this week with temperatures reaching 80 to 85 degrees, curculio beetles may be expected to be active and cause some injury. Where curculio have caused injury in previous years, growers should examine their orchards daily and be prepared to spray immediately should injury appear on the young fruits. The beetles have been out for some time but cool weather has kept them inactive.

THE EXPERT To Bt The Weather

By RA PALMER

June 6, 1946—**CHERRY LEAF SPOT**

. . . Cherry leaf spot infection from the rains in late May is now breaking out in Monroe County and can be plainly seen at this time. . . .

. . . The spores of this fungus are borne on the under sides of the leaves. Fixed or low soluble copper materials applied to the leaf spots on the under sides of the sour cherry leaves will prevent spread of infection from these spots. The first cherry fruit fly or maggot spray would normally be due about June 10 in Monroe County. In view of the danger of serious leaf spot infection, Monroe County sour cherry growers with orchards in situations where leaf spot has been a serious problem in the past might well consider making the first cherry maggot application immediately, especially if a rain period threatens, using fixed or low soluble copper materials as a fungicide.

. . . Cherry growers who have just applied a thorough sulfur spray to sour cherries will have good protection for a few days before they need make an additional application.

Copper materials cannot be used with safety on sweet cherries. No change is suggested in the regular sweet cherry spray schedule.

June 23, 1947—**CODLING MOTH**

. . . Codling moths continue to emerge at a moderate rate and evening temperatures have recently been more favorable for some moth activity and egg laying. The moths were noticeably more active Sunday night and undoubtedly laid some eggs. Temperatures remained above 60 degrees at Hilton until midnight last night.

The temperatures forecast for tonight and tomorrow night are fairly favorable for moth activity, and considerable egg laying should take place. The temperatures forecast for today and tomorrow should increase the rate of codling moth emergence. The peak of moth emergence should come within the next week or ten days.

The first codling moth application should be applied without further delay in the south and middle zones of Monroe and Orleans counties. There are large numbers of moths in the trees and a sprinkling of eggs have been laid. Some of these eggs are about ready to hatch and a few scattered fresh codling moth worm entrances may be found in some orchards now, certainly by the middle of the week. . . .

Some 10 to 15 percent, or more, of the codling moths in the lake zone have emerged by this time and the first worm entrances may begin to appear late in the week. . . .

RED BANDED LEAF ROLLER

Red banded leaf roller worms are feeding on the under sides of the leaves and are all sizes from small to half or three quarters grown. Lead arsenate in the first codling moth application should be very effective in combating red banded leaf roller provided the spray is so applied as to cover the under sides of the leaves. This will be the last chance to kill the worms of the first brood.

acter of drying periods, the time when good drying weather may be expected to begin, and the temperatures likely to prevail during the periods of wetness. This information is then concisely worded for presentation over the air. By referring to Dr. W. D. Mills's scab chart (American Fruit Grower, January, 1946, page 11) the probable amount and severity of apple scab infection which might occur can be estimated. This estimate is included in the broadcast, together with suggestions on the use of regular and emergency sulfur applications for the prevention or checking of such infections. New York state has developed very effective techniques for making rain applications for scab control; and special attention is given in the radio broadcast to the description and timing of these treatments. This enables growers to prevent or check what might otherwise be a serious scab infection. Bloom applications are also rather generally made in New York state, and the times and conditions under which bloom sprays or dusts might be effectively and safely made are included in the radio material.

Observations are also broadcast on any scab infection that might have occurred in recent shower periods with suggestions for meeting the situation, such as the use of liquid lime sulfur for checking infection which had progressed beyond the point where the milder sulfurs would have any effect, or later, the use of liquid lime sulfur to "burn out" the infection after it had broken through the cuticle of the leaf.

Radio Station WHAM also has a farm program at 12:15 noon which includes a special weather report by the meteorologist of the Rochester office of the Weather Bureau. Arrangements have been made with John Williams, the meteorologist in charge, to include special comments on the weather as it might affect apple scab infection or other fruit diseases or insects. It also is possible to include emergency spraying suggestions on this same radio program.

The example given for apple scab is typical of the information given on other fruit insects and diseases, particularly cherry leaf spot, cherry fruit fly, codling moth on apples, and curculio on peaches, cherries, plums, and prunes.

While the whole system may be called a service operation, it has important educational value. Inquiry at meetings and reports from growers and others indicate that a large proportion of the fruit growers listen regularly to these broadcasts. Hearing a daily report on the situation over the radio, as it develops, has given these fruit growers a much clearer understanding of information on growing better fruit than they might have had before. An important and exceptionally well-informed fruit grower, whose family has been in the business for three generations, made the typical statement that he learned more about apple scab and its control through the radio in one season than he had in many previous seasons. This service is, of course, available to fruit farm workers as well as the operators, and this makes it possible for them to come to work fully informed on the insect and disease problems of the industry.

Large growers have found this very helpful.

The radio service is being continued in 1948 with little change from the previous season. The quantity and quality of the information presented will be somewhat improved. The letters have been rewritten for better co-ordination with the radio broadcasts. Some thought is being given to the possibility of more than one broadcast a day and to broadcasting on Sunday as well as week days. Mother nature works on a full time schedule twenty-four hours a day and seven days a week. The spray service may have to do the same.

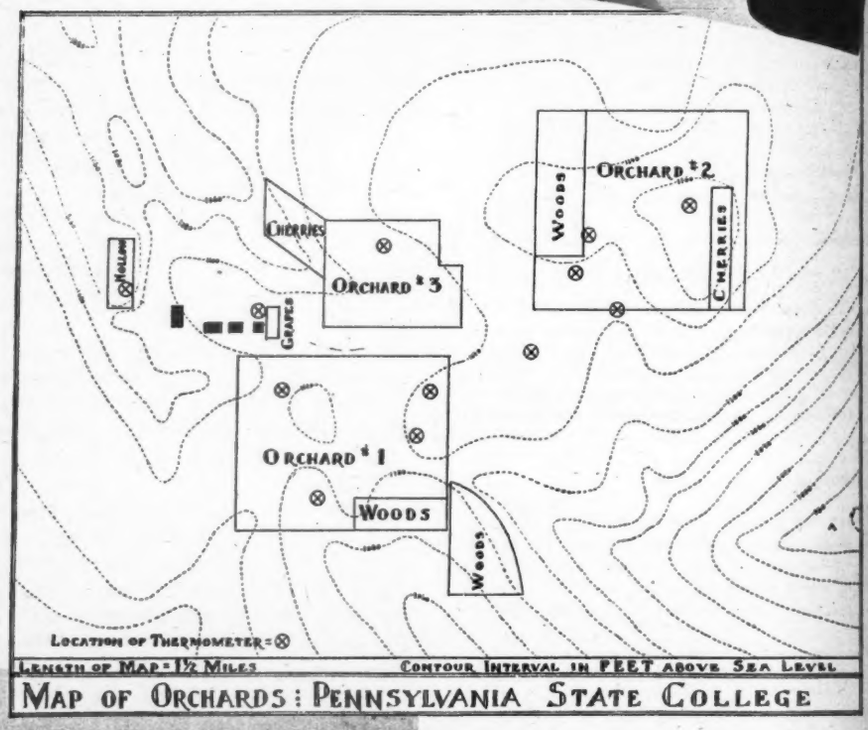
KNOW YOUR ORCHARD WEATHER

By WILLIAM S. CLARKE, JR., *Pennsylvania State College*

DURING A COLD wave it is a common experience for some one to say, "I had five below zero this morning," while another man down the road might say, "I had ten below." Still a third man, in the valley, might report "fifteen below." Somebody up town might say, "My thermometer didn't go to zero." Also, in the spring one man down the valley may have a frost which kills his fruit blossoms, and somebody else up the hill may have no damage. It is well-recognized by most people that within even a few miles variations in temperature may occur, but it is not so well-recognized that within a much smaller area, as within the limits of one farm or orchard, quite a wide variation in temperature may also occur.

If a grower reads "zero" on his home thermometer, he cannot assume that he has the same temperature over his whole orchard. On some days it may be true, but on other days he might be surprised at the variations he could find. For one thing, many home thermometers are so placed around buildings that they receive some heat from the buildings. Even a porch roof will prevent some heat from escaping, so that the thermometer may read several degrees higher on the porch than it would in an open space only a few feet away. A thermometer placed on a tree with heavy foliage will show less cold at night, and a lower temperature on a sunny day, than one in the open. Also, if the grower's home is on a slope, he will often find differences in temperature between the top and the bottom of the hill. Temperatures in town, where there are many buildings, all giving off heat, are often several degrees higher than in the surrounding countryside.

Weathermen who have studied the problem have found that the temperature of the air gets lower with an increase of altitude. This decrease is about 3° F for every thousand feet of elevation. People go to the mountains, where it is cooler, for a summer vacation. High mountains may even have snow in summer. However, on a still night an opposite condition may exist in the air which is within a few hundred feet of the ground. Cold air is heavier than warm air, and the cold air tends to settle downward, so that the lowest ground is the coldest, and the hilltops are the warmest. This condition may extend up into the air about 300 to 500 feet, the exact height varying in different regions, being more pronounced in some seasons and in certain cold periods than in others. Temperature differences are usually



MAP OF ORCHARDS: PENNSYLVANIA STATE COLLEGE

Small matters make big differences in orchard temperatures. Cutting a 500 ft. swath through woods which surrounded this orchard gave air drainage, saved crop when nearby orchards froze.

Some Sample Readings, Degrees Fahrenheit

	Low ground Orchard 1	High ground Orchard 1	High ground Orchard 2	Beside woods Orchard 2	Orchard 3	Open pasture	Hollow	Near Buildings
May 12, 1938	25	26	29	....	23	....	23	26
Jan. 15, 1939	–8	–1	1	2	–7	–6	–13	–4
Oct. 18, 1939	19	22	20	24	18	16	19	20
Jan. 7, 1940	–8	–3	–2	0	–9	–6	–11	–4
May 12, 1940	25	27	27	30	24	23	24	28
Oct. 19, 1940	18	21	20	22	17	14	18	18
Feb. 10, 1941	–7	–5	–5	–3	–9	–8	–12	–6
May 2, 1941	22	24	27	29	21	19	18	24
May 13, 1941	24	27	28	32	24	21	21	25
Jan. 8, 1942	–22	–16	–13	–11	–25	–22	–30	–21
May 11, 1942	28	30	31	35	28	27	26	29
Sept. 29, 1942	24	24	28	....	24	22	23	25

Here are some of the low temperature readings taken during critical periods in the Pennsylvania State College orchards.

most extreme in some of winter's cold waves.

Several years ago some studies were made at the orchards of the Pennsylvania State College in the temperature variations to be found within a small area. The land under study consisted of about 80 acres planted in three blocks of fruit trees. The positions of the orchards and contours of the land are shown in the accompanying map. The distance between the farthest points of Orchards 1 and 2 is about a mile. These two blocks of trees are separated by a large, level field, and to the eye most of the orchard land appears to be nearly level or slightly rolling. Actually, the highest point in Orchard 2 is about 60 feet above the lowest point of Orchard 1, and 80 feet higher than the lowest point of Orchard 3.

Maximum and minimum thermometers were set out at a number of different points in the orchards. They were usually hung in trees with sparse foliage and placed so that they were shaded from the sun, but still well-exposed to the weather. Tall trees with big trunks and small tops, or young trees which had not yet developed heavy foliage were usually selected; and in a few cases the thermometers were hung on fence posts. The positions of the thermometers in the orchards are indicated on the map. Daily readings were taken on the thermometer near the orchard buildings, which was kept in a standard weather instrument shelter, and the others were read about once a week, or oftener during critical periods in the spring and fall.

The difference in elevation between Orchards 1 and 2 would appear to be negligible; however, on still, clear nights the temperatures in Orchard 2 have averaged about 3 degrees higher than those in Orchard 1. The woods at the lower corner of Orchard 1 partly blocks the downward flow of cold air and helps to make this orchard colder than the other. On the other hand, the woods in Orchard 2 is on the west side and helps to modify the cold westerly winds, making this orchard less frosty.

These differences in temperature are reflected in the crops borne in the two orchards. A frost after bloom in 1938 brought temperatures of 26 degrees to Orchard 1 and killed all the fruit, while on the highest point of Orchard 2 the minimum temperature was only 29, and a crop was set on this part of the block. In 1941 a series of spring frosts reduced the crop in Orchard 1 to a few hundred bushels, while that in Orchard 2 was 10,000 bushels. Both blocks of trees had had heavy blooms. In the frosty spring of 1946 only light and scattered crops were borne by most of the apple varieties in Orchard 1, while most blocks of trees in Orchard 2 bore moderate to full crops.

The land in Orchard 3 slopes toward the west, and it is more exposed to the cold westerly winds which prevail during most frosty periods than are the other two orchards. The temperatures in this orchard have averaged about 2° lower than those in Orchard 1 and about 5° lower than in Orchard 2. The apple trees on this land began to bear in 1935, and from that year until 1947 have borne five good crops, only one of them being in the last seven years. The sour cherry block in Orchard 3 bore one good crop between 1929, when the trees were planted, and 1944, when the trees were taken out; while the sour cherry trees in Orchard 2 have borne many heavy crops, and even in unfavorable years have had light to moderate crops.

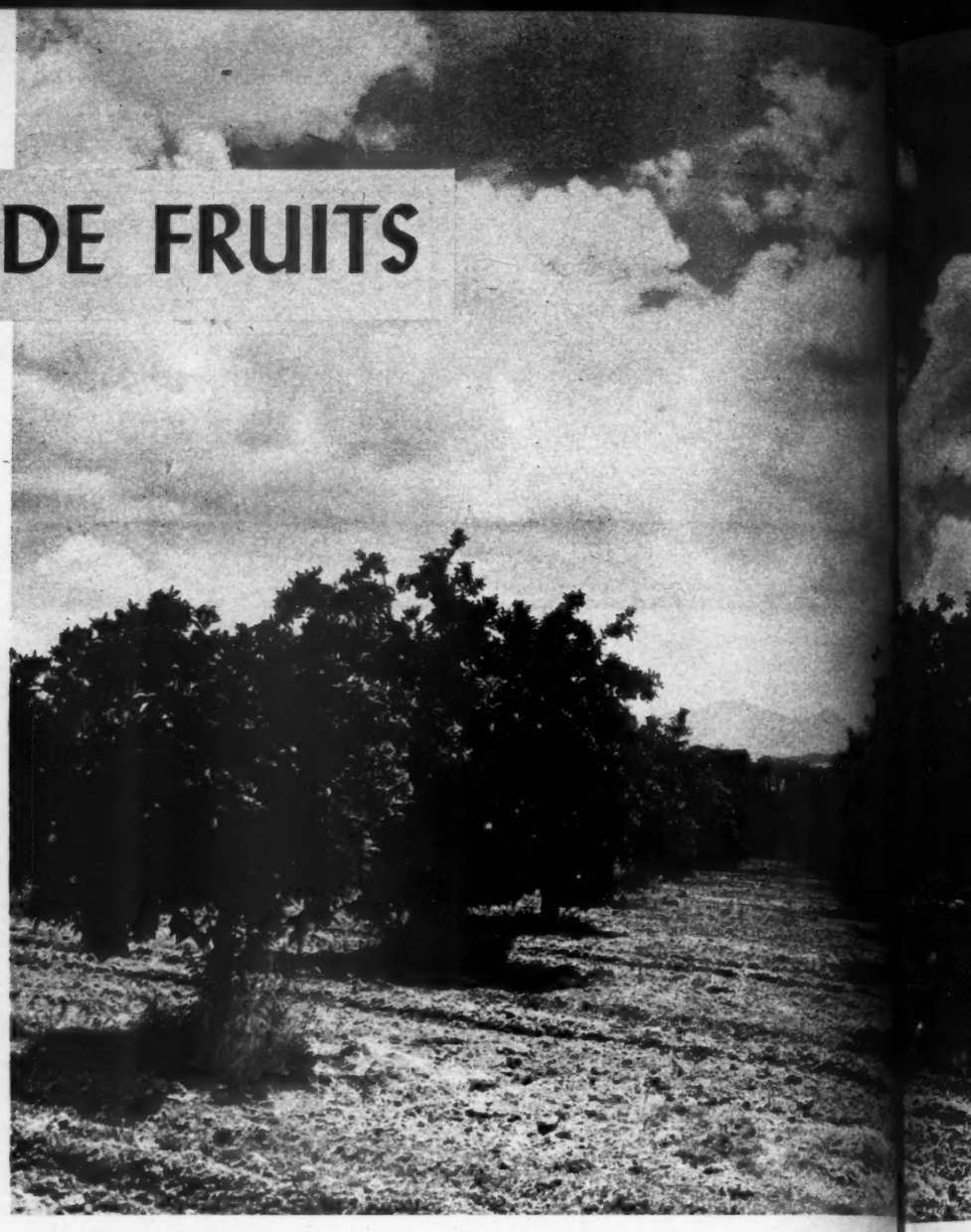
In the small plot marked "Hollow" there was a block of trees and a nursery. This land is about 50 feet lower than the land at the buildings, and 40 to 60 feet lower than Orchard 1. The cold air tends to drain through this hollow, and temperature readings were often 5° to 10° lower here than at the buildings or in Orchard 1. The soil is fertile, and the nursery was successful, but the block of trees bore only two small crops in the 12 years in which they stood there, and the fruit in both crops was badly damaged by fall frosts.

Even within orchard blocks, variations in temperature occur. The low ground in Orchard 1 is usually about 2° colder than the higher ground in the same orchard—sometimes colder, and the fruit is often thinned more heavily by spring frosts on the lower ground. The woods beside Orchard 2 has the most effect on the trees nearest to it. Low temperature readings just beside the woods are often 2° or 3° higher than at points a few tree rows away. In 1938 the apple trees right beside the woods bore good crops, while those away from the woods had very little fruit. The lower ground near the edges of Orchard 2 is often 3° to 5° colder than in the rest of the block. Sometimes the tops of the trees near this border will bear fruit while the lower parts will have very few apples. On the higher ground the whole trees will be full of apples.

The fruit trees, themselves, compose something of a forest and thus affect the temperatures. The thermometers on fence posts away from the trees often had minimum temperatures 3° to 5° lower than in the adjacent orchard land, and the thermometer on a post in the large field between the two orchards often gave lower readings than at any spot in the orchards.

Many fruit growers would find it of considerable benefit to place maximum and minimum thermometers at several points in their orchards and observe the different readings. It would be of great benefit to place a thermometer on a piece of ground on which it is proposed to plant a new block of trees. Comparisons can be made with records in blocks of trees of known behavior, and safe and frosty sites for orchards can be determined in this way.

NATIONWIDE FRUITS



PEACHES

● **Results of one** of the first investigations under the Research & Marketing Act of 1946 bring out many interesting details regarding peach marketing. Reported in Misc. Report 111 of the Farm Credit Administration, USDA, information was gathered in St. Paul and Minneapolis regarding the marketing of peaches from Colorado, 1200 miles away. According to the report, buyers showed a distinct preference for firm ripe fruit. Tree ripe peaches were second and hard ripes hardly sold at all as long as the others were available. Appearance seemed to be the determining factor with firm ripe fruit looking fresh and bright, tree ripe dull, and hard ripe green.

As a result of long years of industry promotion, Twin City consumers expressed a definite preference for Colorado peaches over those from other areas. This indicated the advisability of continued advertising programs by growers.

Recommendations are as follows:

1. In view of the distinct consumer preference for firm ripe peaches and the small losses from the firm ripe stock, continued experiments in packing and shipping firm ripe fruit are recommended.

2. Through card survey, a broad sample of consumer opinions on marketing problems should be secured. In the meantime, tying the industry program in with dealer advertising, at least in some test cities, should be considered.

3. Because such a high proportion of boxed peaches are sold in unbroken units, some system of packing the actual count nearer the number stamped on the box is needed.

4. Either through cleats or a wider end board a deeper box for the large-size peaches to prevent bruising should be developed.

Copies of this report may be had on request while a supply is available from the Director of Information and Extension, Farm Credit Administration, U. S. Dept. of Agriculture, Washington 25, D. C.

BOYSENBERRIES

● **A canefruit very** similar to the boysenberry has been growing for a number of years in gardens in and around Lavaca, Ark. Only recently has this fine fruit gained the attention of commercial growers. The berry had no name when brought to Lavaca but in recent years has more or less acquired the name of Lavaca Improved Boysenberry. Sometimes it is referred to just as the Lavaca Berry.

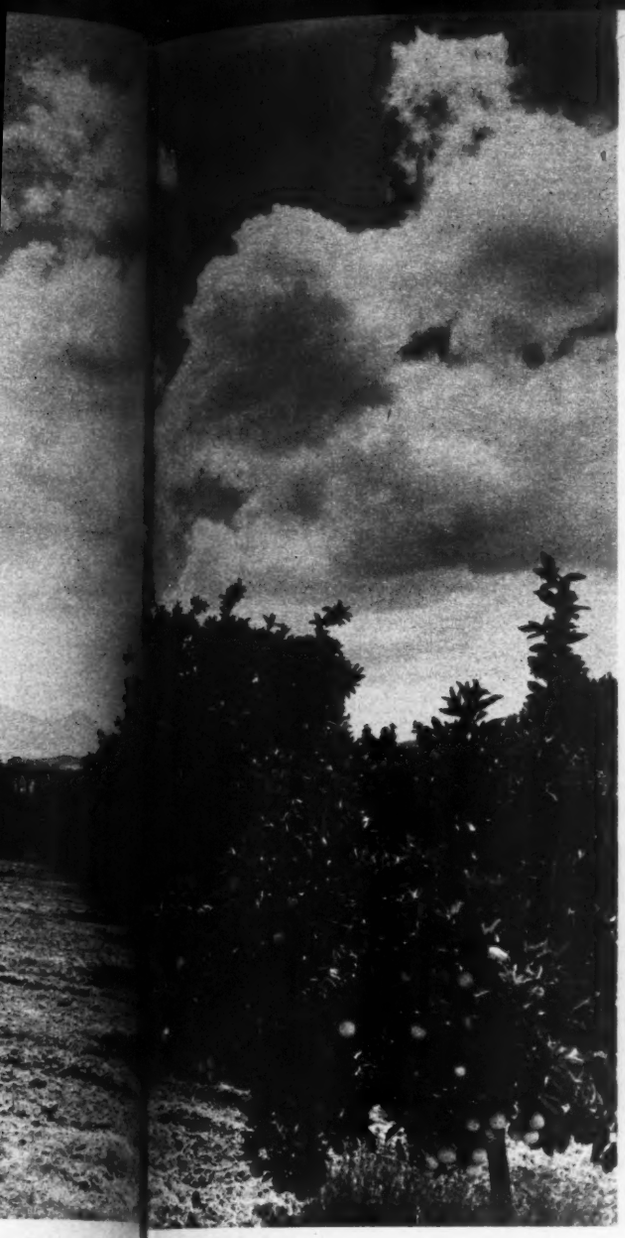
The history of the plant is not fully known, but it did originate in Luther Burbank's plant breeding gardens in California. An inhabitant of Lavaca was visiting Burbank at his California home and while walking through the gardens noticed a luxuriant berry vine loaded with fine fruit. He was so pleased with the flavor of the fruit that Burbank gave him some plants to take with him back to Arkansas.

The plants grew thriftily and were very productive at Lavaca, and several people began to grow these delicious fruits in their gardens. Due to the extreme softness of the fruit, however, it could never be shipped and so remained a garden fruit only.

But with the advent of quick-freezing, the status of this berry has begun to change. It has proven to be an excellent fruit for freezing, and a thriving industry has now grown up around Lavaca, Ark., the fruit being sold to a large freezing plant in the vicinity. Several hundred acres are now under cultivation.

RASPBERRIES

● **Crossing two** varieties of raspberries, the red "Latham" and the black "Plum Farmer," has produced a new bright red berry which is large in size and is disease-resistant, according to its discoverer. Harvesters will find the berry easy to pick because the stems are unusually long, the variety is a prolific bearer, and it is resistant to cold snaps in the spring because of its hardiness. The inventor is L. M. Toms of Nevada, Iowa.



APPLES

• **Delicious apples** made news recently, in a report by the U. S. Department of Agriculture, with a production record of 21,000,000 bushels during the period 1942-1946. This was almost twice as many bushels as any other variety with the next three in order being Winesap 12,000,000, McIntosh 9,000,000, and Jonathan 8,000,000. Some of the newer varieties such as Cortland, Macoun, and Lodi have gained in popularity in the last several years, and specialists at the New York Agricultural Experiment Station suggest that fruit growers will find them worth trying.

Down in North Carolina research has indicated that Turley and Wealthy are two apple varieties which may now be grown there commercially. Although they have been grown for many years in other parts of the country, growers in that section have not planted them in any numbers up to this time.

• **Growers in New York** are advised to apply spring dormant sprays to their apple trees if they have lost as much as one or two bushels of apples per tree during 1947 as a result of an attack by the eye-spotted bud moth. Recommended for control are 19-21 ounces of actual dinitro-o-cresol (DNOC) in each 100 gallons of a spray mixture. These pests will eat the leaves, blossoms, and fruit unless thoroughly sprayed; 95 percent control may be expected, however, if recommendations are followed.

• **The Ohio Agricultural** Experiment Station reports that the 17-year locust will attack most of the counties in eastern Ohio this next summer. Damage to young trees up to six years old will be prevalent because the females lay their eggs in slits in the bark weakening the small branches, and other insects and diseases will congregate where these injuries have created an opening. Dr. C. R. Cutright of the Station suggests tying the branches closely together and covering them with cheesecloth and wrapping the trunk of the tree with paper as the only advisable methods for combating the pest. He also says that pruning should be delayed until after the invasion.

If this locust appeared in great numbers in 1914 and 1931 in any area, it is advisable to delay planting until the fall of 1948, according to Dr. Cutright.

PERSIMMONS

• **If the public** could be educated to eat more persimmons, this sub-tropical fruit could become a very profitable and extensive industry in the United States. The fruit with its oriental flavor is well-liked by the Latin population, but many people in the northern regions have never tasted it. However, Al Weaver of Minneola, Fla. has planted 1500 persimmon trees and finds the business both interesting and profitable. When the best fruit is packed attractively, he can sell one box of 16 for three dollars net. The trees are rather delicate to plant and cultivate and will not ordinarily grow in anything but a warm climate. Extreme care must be taken in harvesting the fruit, and the picking must be done by hand; bruised fruit cannot be shipped.

Persimmons do not keep well, but the new Flavorseal process (coating fruit with a light film of wax) has increased their keeping quality 50 percent according to E. T. McFadden of the California Persimmon Growers Association. This process improves the appearance of the fruit and has

(*Continued on page* 44)

WELL, HERE we are again, perk as a pussy and rarin' to go! Was into town the other day 'n' saw all the latest papers. Land o'Goshen, all the things that go on in the world! Read about a feller in Benton Harbor, Michigan, gettin' fined $25 for overfacin' peaches in the market. Yup, hauled him right into court, they did. Some feller—Dr. Gordon Kirk it was—done some experimentin' in Florida and found that cattle fed on citrus pulp and whole citrus fruit gain as much as 2 to 2½ pounds a day. By whillikers, that's sumpin!

Somebody out Washington State way found out that stores can sell little apples by packin' 'em in a special, small-sized box. Folks in the Granger states like to buy 'em. Rangers say they can carry the boxes under their arms better. Mothers like the little fruit for the kids—say they'll eat every bite without wastin' any. A spell ago, there was some kind of fruit exhibit out Chelan, Washington, way where a feller showed a plate of crossed Golden Delicious apples and Anjou pears. Wonder what they'd call a thing like that. I'd think the fruit'd be all confused—like some people who always wanta be somethin' that they aren't.

While I was in town, I met Zeb Hoskins, and he told me how he read somewheres about Luther Burbank growin' 400 different varieties of cherries on one tree. He grafted 'em, that's what he done. That's a heap of varieties all on the same tree, seems like.

I guess most everybody is in a tizzy over spray chemicals these days. Heard tell that since DDT come out, the insecticide manufacturers have done $30,000,000 worth more business than they did before—that's only in three years, mind. Somethin' that might be good for usin' in vineyards is recommended by the Washington State College. It's a treatment for fence posts, etc. to make 'em last longer underground. Some chemical called pentachlorophenol does the job, they say. Might be worth writin' to 'em at Pullman, Wash., to find out more about it.

Well, I guess we've frittered away enough time for now, so I'll just say "so long" and be gettin' on. Drop in again, Neighbor.

CENTENNIAL CELEBRATION

Shortly after the banquet at which both received Wilder Medals, E. J. Kraus, Chicago, talks with W. H. Chandler, California.

Arthur C. Bobb, Connecticut (right) and D. B. Perrine, Illinois, explains merits of Eastern apples to Charles Morrison, Wash.

● **A truly national** fruit Congress with representatives from all the major fruit growing sections of the country, and from Canada and Mexico, celebrated the 100th anniversary of the American Pomological Society in St. Louis, February 17, 18, 19. Sponsored by the Illinois and Missouri Horticultural Societies, and in cooperation with the American Society for Horticultural Science, American Association of Nurserymen, National Apple Institute, and National Peach Council, the Centennial meeting attracted over 1000 leaders in fruit growing, marketing, industry, and horticultural science.

Commercial and educational exhibits featuring the old and the new in fruit growing drew many interested spectators. Displayed were the first John Bean pump, garden tools of Luther Burbank, and over 75 varieties of rare and ancient apples.

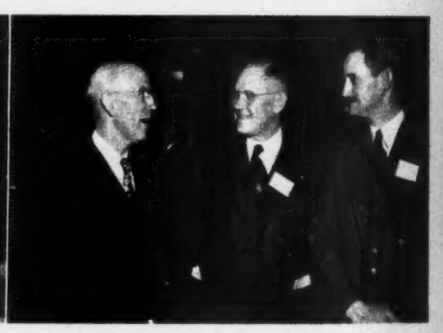
Shown here are some of the personalities who passed in front of the AMERICAN FRUIT GROWER cameraman. For story of the meeting, see page 28.

Among the Illinois delegation were Willis A. Hartline, Anna, (left) and M. J. Dorsey, head Dept. of Hort.

President and Secretary of American Pomological Society: Stanley Johnston, Michigan (left) and W. D. Armstrong, Kentucky.

From Pennsylvania came Robert Haines, Hereford, (left) and Sheldon Funk, retiring peach council president.

From Louisiana, (left to right) D. C. Alderman, J. C. Taylor, A. B. Larange and R. M. Bingham.



Paul Stark (left) chats with John R. Magness, USDA, and David Simpson, Illinois grower, after the meeting.

W. R. Martin, Jr. (left), Secretary, Missouri Hort. Soc. and Lee Jenkins, University of Missouri entomologist.

Two Kentuckians talk over crop prospects: W. W. Magill, Lexington, (left) and C. S. Hastings, from Fulton.

Oklahoma Horticultural Club: Fred LeCrone, Neal Cupp, Bob Smith, Gerald Cupp, Don Vaught, Bob Burrows.

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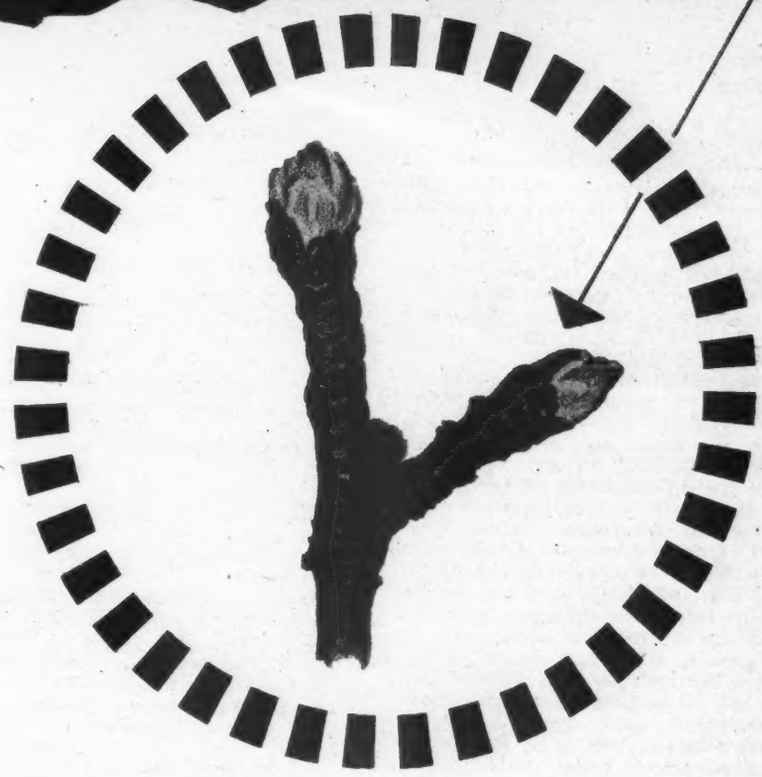
● **KILLS THE APHIDS AS THEY HATCH**—including the "stem-mother" aphids congregated on the buds. Avoids the expense of late winter egg sprays.

● **HELPS CONTROL BUD-MOTH** in green-tip infestations when used with bordeaux mixture and oil. Also effective for use with lime sulphur in delayed dormant sprays.

● **AIDS APHID-SCAB CONTROL** when used in combination with lime-sulphur and lead arsenate — and there is no danger of injury to buds.

● **CAN BE USED WITH OTHER STANDARD SPRAYS**— oils, stomach poisons and fungicides. Thus it saves time, labor and money of added sprayings.



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STATE NEWS

- **Six Wilder Medals Awarded at APS Meeting**
- **Unusually Cold Weather Causes Concern**

ST. LOUIS, MO., *Feb. 17, 18 19*—Climaxing a history-making meeting which reviewed the accomplishments of 100 years, American Pomological Society's banquet program honored both state and national leaders.

Dr. H. B. Tukey, chairman of the Wilder Awards Committee, presented six silver Wilder medals. Three were made to America's greatest horticulturists, Liberty Hyde Bailey, Ezra Jacob Kraus, and William Henry Chandler. Because Dr. Bailey was absent on a plant exploration trip to South America, he could not personally receive the award but he did send a communication to the Congress which was read by President Johnston. Both Dr. Kraus and Dr. Chandler made short talks in which they expressed their thanks and reminisced about lifetimes in horticulture.

A Wilder medal was also awarded to George M. Darrow, Bureau of Plant Industry, U. S. Department of Agriculture, for achievements in breeding fruits. The Horticultural Experiment Station, Vineland, Ontario, and the pink-fleshed Ruby grapefruit also received Wilder medals.

Mr. Patterson Bain, speaking for the Missouri Horticultural Society, presented awards for outstanding achievement to Professor T. J. Talbert, head, Department of Horticulture, University of Missouri, and H. G. Swartwout, Professor of Horticulture.

Awards by Dr. A. S. Colby for the Illinois Horticultural Society were made to W. A. Ruth and M. J. Dorsey, both of the University of Illinois, for outstanding leadership in Illinois and national horticulture.

An award of an attractive desk pen and stand was also made to H. L. Lantz of Ames, Iowa, in appreciation of his services as secretary of APS for 17 years.

National Peach Council

Meeting at the Sheratin Hotel, and later in joint session with APS, the National Peach Council heard estimates of the coming peach crop by states and authoritative, up-to-the-minute reports on marketing and production problems. Officers elected were Alfred G. Smith, Lexington, S. C., president; Grant Merrill, Red Bluff, Cal., 1st vice-president; and Oscar Jaynes, Palisade, Colo., 2nd vice-president. In the interests of establishing a full-time national secretary, Carroll R. Miller tendered his resignation as secretary-treasurer but will continue in this capacity until a new full-time secretary is selected.

NAI to Harrisburg

The session, presided over by Truman Nold, executive-secretary of National Apple Institute, heard Harry F. Eustace, vice-president, Farm Market Relations, San Francisco, review progress in fruit growing and John R. Magness size-up the apple situation today. Nold spoke briefly about the first national advertisement of apples currently appearing in the Saturday Evening Post and reported that the next annual meeting of the NAI will be held in Harrisburg, Penn.

In its business session the Missouri Horticultural Society elected the following officers: Frank D. Connett, Agency, president; J. Ed May, Gray Summit, 1st vice-president; U. L. Coleman, Marionville, 2nd vice-president; W. R. Martin, Jr., Columbia, secretary-treasurer. Elective board members are Vernon Griffen, Hannibal, Fred Vollenweider, Seymour, and Wm. Beggs, Cape Girardeau.

Officers elected for the Illinois Horticultural Society were: D. B. Perrine, Centralia, president; Dwight Powell, Urbana, 1st vice-president; Lester Stone, Moline, 2nd vice-president; and Curt E. Eckert, Belleville, secretary-treasurer.

APS to Washington State

As its last item of business, APS Board of Managers accepted the invitation of the Washington State Horticultural Society to meet with them next winter. This meeting is traditionally held during the first week in December.

INDIANA QUALITY PLUS APPLE CLUB

At the Indiana Horticultural Society meeting medals were awarded for production of clean fruit. Some of the members of this Quality Plus Club are shown in the photographs above; from left to right: D. T. Woods, Russel J. Williams, L. J. Doud, Sam McGlaris, and Roy Tuttle.

CONNECTICUT, *Feb. 17*—Temperatures reported at 20° below zero and above normal snow accumulation are both offering concern to Connecticut fruit growers. Favorably located orchards have not been subjected to such low temperatures, but low blocks of peaches are undoubtedly injured. Three to four feet of accumulated snow cover has been hindering normal winter pruning. Above normal rabbit damage is being reported by many growers, especially on younger trees. Delayed pruning and bridge grafting to repair rabbit damage will keep most of our growers plenty busy the rest of this dormant season.—*Arthur C. Bobb, Extension Fruit Specialist, Univ. of Conn., Storrs.*

ILLINOIS, *Feb. 14*—We have had about one of the coldest winters in a number of years with considerable snow which has delayed pruning operations to some extent.

Following the cheap apple prices of last fall and this winter, quite a few growers are cutting out the older orchards; there will be at least 400 acres taken out of Adams and Pike county this year, and a lot of the other orchards will be pruned heavier than ever before in an effort to raise larger and better fruit. Prospects are very good for a bloom again this coming year. Most all growers are determined to try and raise better fruit with less expense.—*C. C. Mast, Sec'y, Ill. State Hort. Soc., Quincy.*

Thirty-eighth annual report of the Northern Nut Growers Association for the year 1947 is now available from J. C. McDaniel, Sec., Tennessee Dept. of Agr., State Office Bldg., Nashville 3, Tenn. Containing 130 pages with illustrations, the report consists of papers carrying the latest information on nut growing. Free to members, the report costs $2.00 to non-members.

MAINE, *Feb. 16*—In regard to weather, Maine has been in a freezer, so to speak, since early December. Some three feet of snow blankets the state and at this writing is held down by a heavy crust. This spells danger for many young apple trees that may be partially buried in the snow. Some growers have already taken steps to dig the limbs out of the crust. There doesn't seem to be any alarm about fruit bud injury or tree injury at the present time. Many of the regular growers have already started pruning operations. Some are still waiting until the snow settles down a bit. We all look forward hopefully to a favorable spring season. Throughout the state the water supply is very critical, many farm areas having to carry water from lakes or municipal water supplies in order to meet household necessities and requirements for the stock. Frost has apparently penetrated the ground to some depth and some of us wonder what effect this will have on bearing apple trees.—*Rockwood Berry, Sec'y, Maine State Pomological Soc., Livermore Falls.*

MASSACHUSETTS, *Feb. 19*—Sub-zero temperatures have been all to frequent in Massachusetts this winter. What effect they will have on this year's fruit crop is not fully known at this time. It is doubtful if the apple crop has been affected any, if at all. Some growers have reported temperatures of -20 in their peach orchards which have probably destroyed most of the fruit buds. However, with so much steady cold this winter and prac-

(*Continued on page* 53)

IN THE NEWS

DR. N. F. CHILDERS

New chairman of the Dept. of Horticulture at Rutgers University is Dr. Norman F. Childers who succeeds the late Professor M. A. Blake. Dr. Childers was formerly assistant director and head of the plant research program at the Federal Agricultural Experiment Station in Mayaguez, Puerto Rico. Before this he was assistant professor of horticulture at Ohio State University and assistant horticulturist at the Ohio Experiment Station.

Dr. Childers received his bachelor's degree in horticulture from the University of Missouri in 1933 and in 1934 was awarded his master's degree from the same university. He took his doctor's degree at Cornell University, majoring in pomology. At Rutgers University. Dr. Childers will deal with the physiology and culture of fruits in addition to the administration of the department as a whole.

GERALD C. ROMIG

The American Chemical Paint Co., Ambler, Pa., has named Gerald C. Romig, vice president, as head of the company's agricultural division. The division, formerly headed by Franklin D. Jones who left the company, is an important factor in the national agricultural market through its sales of plant hormones and 2,4-D weed killers.

Mr. Romig, who is well-known in the agricultural field, brings to his new post a scientific and sales background. More orchard supply dealers and greater distribution of agricultural products will be Mr. Romig's first goal.

Under Mr. Romig will be Joseph H. Torchiana, advertising manager; Robert H. Beatty, horticulturist in charge of research and field work; William W. Allen, in charge of production; Joseph M. F. Leaper, chief chemist; John C. Hendren, and Thomas Farrell, supervising sales activities.

American Chemical Paint Company is known to fruit growers by its naphthalene acetic acid harvest spray "Fruitone" and its 2,4-D weed killer "Weedone."

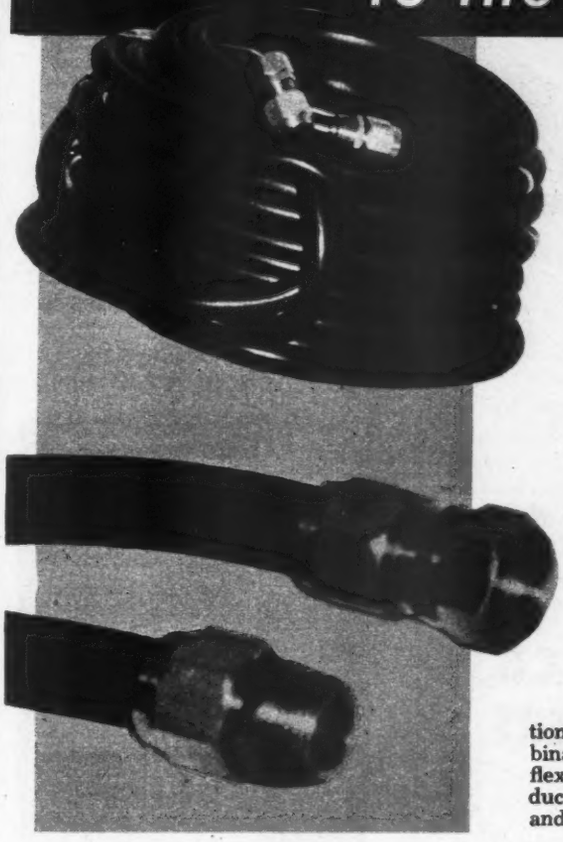
DR. A. W. DRINKARD

Dr. A. W. Drinkard, Jr., has retired after 30 years' service as director of the Virginia Agricultural Experiment Station, effective February 1. His undergraduate days were spent at Virginia Polytechnic Institute from which he has his B.S. and M.S. degrees; and in 1913 he was awarded a Ph.D. degree from Cornell University.

Dr. Drinkard has contributed several papers to the field of agricultural science among which is "Fruit-bud Formation and Development," one of the outstanding treatises on this subject. A life member of the Virginia State Horticultural Society, Dr. Drinkard was a director in that organization from 1917 to 1923. He is a fellow in the American Association for the Advancement of Science and a member of the American Society for Horticultural Science and American Association of University Professors.

BETTER SPRAY HOSE

At Exceptional Savings to the Grower



Stronger Lighter More Flexible

800 lbs. working pressure designed and field tested for any possible spray rig pressure. Super strength rayon cord carcass is twice as strong as conventional cotton cord, yet 8 to 10 lbs. lighter.

Offered for the first time to the commercial fruit growers as the very latest development. This hose is not only oil resistant, it is oil proof against all present day pesticide chemicals.

Full flow streamlined couplings, snag-proof, lightweight, all brass construction. This hose and coupling combination because of its amazing flexibility and lightness will produce considerable savings in time and labor.

	Price per 25 Ft. Length Coupled	Price per 50 Ft. Length Coupled
1/2" High Pressure Hose	$13.00	$21.00
3/4" " " "	19.00	33.00

Maximum length of 50 ft. Check or money order must accompany order. All shipments f.o.b. Cleveland, Ohio.

SOLID BRASS STREAMLINED COUPLINGS— CAN BE CHANGED IN THE FIELD WON'T WEAR OUT

FILL OUT AND ORDER NOW!

Please ship: ..... No. of Lengths ..... No. Ft. per Length .....

Name.....

Address.....

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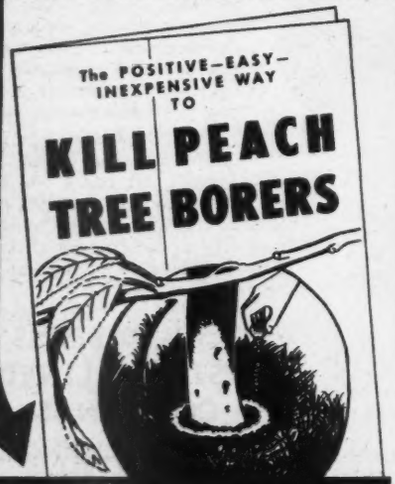
SPRAY HOSE ASSOCIATES

Div. Neff-Perkins Company

1370 West 9th Street — Cleveland 13, Ohio

KILL
Peach
Tree
Borers

Pure Para-dichlorobenzene is strongly recommended by the U. S. Department of Agriculture for killing peach tree borers. Fill in and mail coupon for our folder on the use of SOLVAY Para-dichlorobenzene in killing peach tree borers. Gives full details of how to use this effective insecticide for best results.



SOLVAY
PARA-DICHLOROBENZENE

SOLVAY SALES DIVISION
Allied Chemical & Dye Corporation
40 Rector Street, New York 6, N. Y.
Please send me, without obligation, your free folder on the use of SOLVAY Para-dichlorobenzene in killing peach tree borers.

Name.....

Address.....

City.....

State.....AF-3

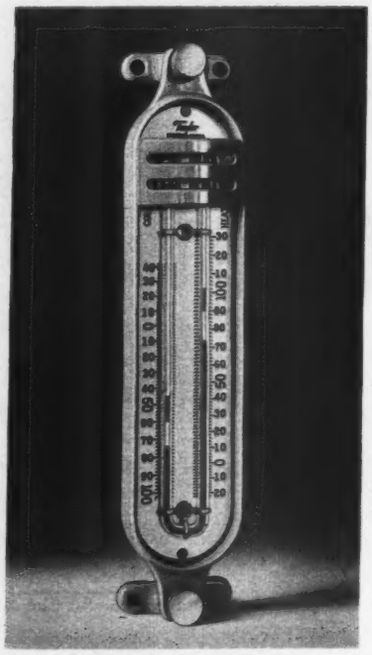
WEATHER INSTRUMENTS FOR THE ORCHARD

By P. R. JAMESON

WEATHER AND climate are closely related but are not identical; thus for information about weather we turn to the barometer, and about climate, to the thermometer. The barometer has a very intimate connection with the climate of a place, and the thermometer with its weather.

Although weather is a thing of impulses and seems erratic, it is governed, like all things in nature, by established laws. Every change of breeze, every passing shower, every cloud which forms and vanishes has had its lawful causes. The job is to attempt the translation of these laws.

The basic cause of "weather" is the pressure which results from the air's weight and the changes of that pressure. As the beat of one's pulse shows to an extent, the state of his health, the rise or fall of the barometer shows the condition of the atmosphere in respect to its pressure. Reading the barometer is feeling the pulse of the air, but not everyone with eyes can read a barometer accurately any more than everyone with fingers can feel a pulse understandingly.

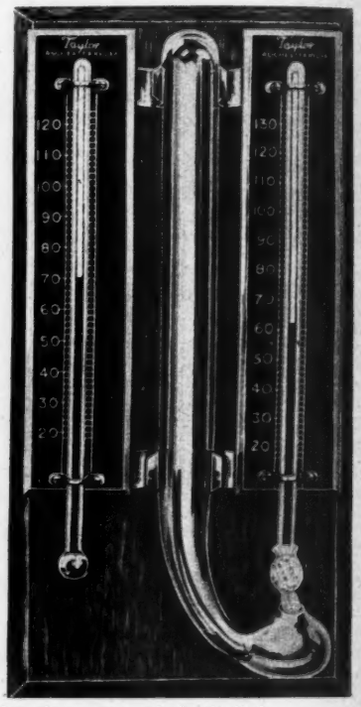


A maximum-minimum thermometer.

Since the beginning of the world, man has tried to "read the weather." He has forecast coming weather by color of flowers, rhymes, direction of wind, color of clouds, flight of birds, wetness of seaweed, and by many other methods—all in a way having something in their favor, but none being sufficiently accurate to create a system by which future weather could be determined.

Early in the 1600's an Italian philosopher discovered a method by which the weight of the air could be measured. From this the barometer was developed and, in its present form, it is a highly valuable instrument for giving information on probable weather and weather changes.

A useful type of barometer that has been developed is the "Stormoguide." On its dial is noted all of the expected forecasts for the locality and these are shown for either an increasing pressure or a lowering pressure; thus the instrument becomes, in a sense, a home weather bureau.



Here is a wet-and-dry bulb hygrometer.

Thermometers are also essential to weather forecasting, for in early spring or fall, frosts frequently occur, occasionally causing much damage and loss to the marketable product. With a rising barometer and a temperature in the upper 30's, a frost could well be expected that night. A hygrometer is essential for the accurate foretelling of such conditions. This consists of two thermometer tubes, one of which has a wick attached to it and which terminates in a small vial of water. When used outside, the hygrometer should be about 5 feet from the ground, free of any local temperature influence, and in

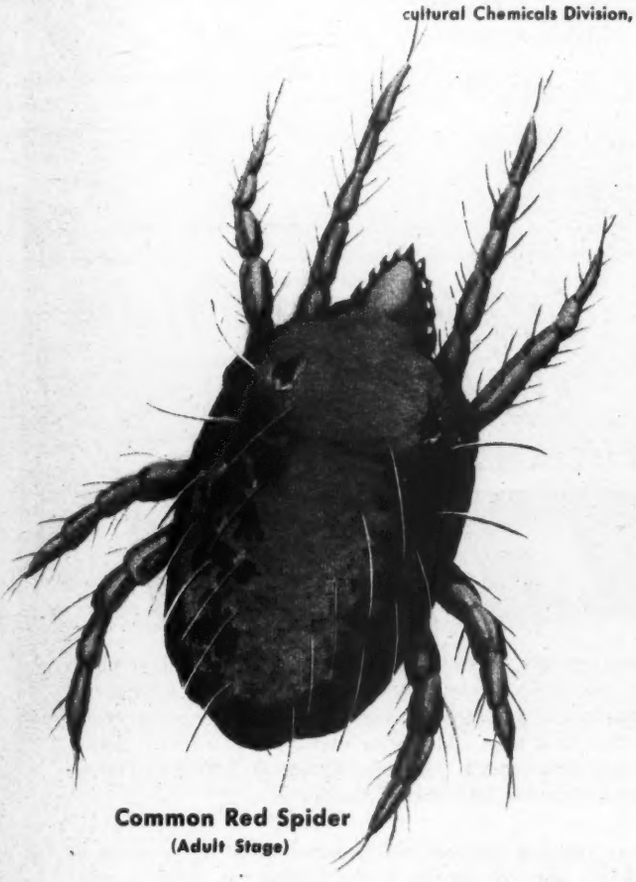
(*Continued on page* 47)

Mr. Jameson is senior meteorologist for Taylor Instrument Companies.

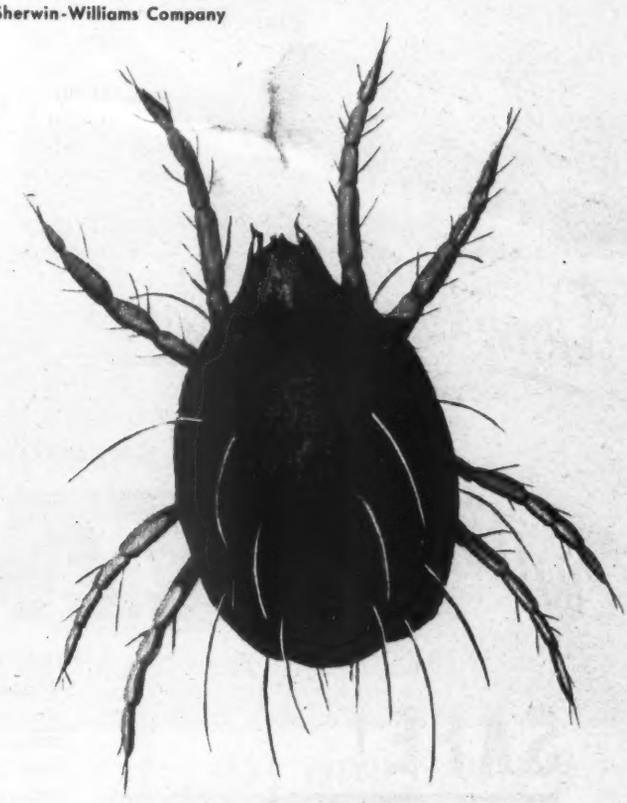
THE RED SPIDER YIELDS TO SCIENCE

By H. A. WATERS

Director of Technical Service and Field Development, Agricultural Chemicals Division, The Sherwin-Williams Company



Common Red Spider
(Adult Stage)



European Red Mite
(Adult Stage)

In recent years growers of deciduous fruits have become much more conscious of certain minute but destructive pests commonly referred to as red spiders and red mites. They are not insects, but belong instead to the spider group. These tiny 8 legged spiders, on the leaves, are barely visible to the eye, measuring only 1/100th inch long when fully grown. They rasp the leaf surface with their microscopic mouthparts until the plant cells are broken and ooze sap on which these mites feed. At each feeding point the cells die and turn a bronze color. When numerous, these pests eventually destroy a large portion of the surface area, resulting in bronzing and eventually falling of the leaf. A heavy infestation thus saps the vitality of a tree and lessens the size and quality of the crop.

There are two distinct types of these pests. The European red mite is the common species of one type. They have distinct reddish globular bodies and overwinter as reddish eggs laid usually on the bark. Dormant oil spray will kill these eggs. The common red spider is representative of the second type, of which there are several species, all very similar. This type overwinters as partially grown spiders under flakes of bark and on grass and debris on the ground. Dormant sprays thus have little effect on this later type as most of them are off the trees when the spray is applied.

By common usage both the terms "red spider" and "red mite" are applied interchangeably to both types.

Both types may be found on trees at once. Both can develop to destructive numbers very quickly since under favorable conditions it takes only 10 to 12 days for a generation, and a female lays up to 100 eggs.

The recent increase in the importance of this problem is due to the widespread usage of DDT on fruit trees. Unfortunately the dosage of DDT used for insect control does not destroy these spider-type pests, but does destroy the predators that normally live on red spiders. Thus the red spiders have a free chance to develop in large numbers. Oddly enough, one of the most important of these predators is another minute member of the spider group that happens to be sensitive to DDT. At one time this problem was considered so serious it threatened the widespread use of DDT on fruit.

Because of the increased importance of this problem governmental and industrial research agencies have in recent years devoted much effort to finding new organic chemicals that can be applied during the growing season to control red spiders. This work has been so successful that there are now available to fruit grower several organic chemicals that give excellent control of red spiders. Some have been on the market one or more years. The year 1948 will see the introduction of still better ones, ones that have such advantages as less tendency to injure the trees, longer effective life or greater overall effectiveness.

With these new chemical tools the fruit grower can now make greater use of DDT for fruit insect control and still avoid damage from red spider.

Don't let mites do this —

Keep your apple trees looking like this

SHERWIN-WILLIAMS

with DIMITE

SAFE!

RESIDUAL!

SPECIFIC!

POWERFUL!

DIMITE is safe to use. There is a wide margin of safety on plant foliage. Not hazardous to the user and may be safely applied by observing reasonable care. Proved safe on foliage of apples, pears, citrus and other fruit trees and a wide variety of greenhouse plants from the heat of Oklahoma to the cool of Canada and from the humid Atlantic seaboard to the arid Pacific Northwest.

DIMITE has amazing residual effectiveness, while not ovicidal in action—its action lasts for several weeks, killing the newly-hatched nymphs as they emerge from the eggs, thus preventing the buildup of new infestations for long periods. Frequently one application will be effective for an entire season.

DIMITE is specific in its action. Kills only mites, red spiders and related forms. Does not kill predators which help to keep down mite and aphid populations. Compatible with most commonly used insecticides and fungicides except those of an acid nature.

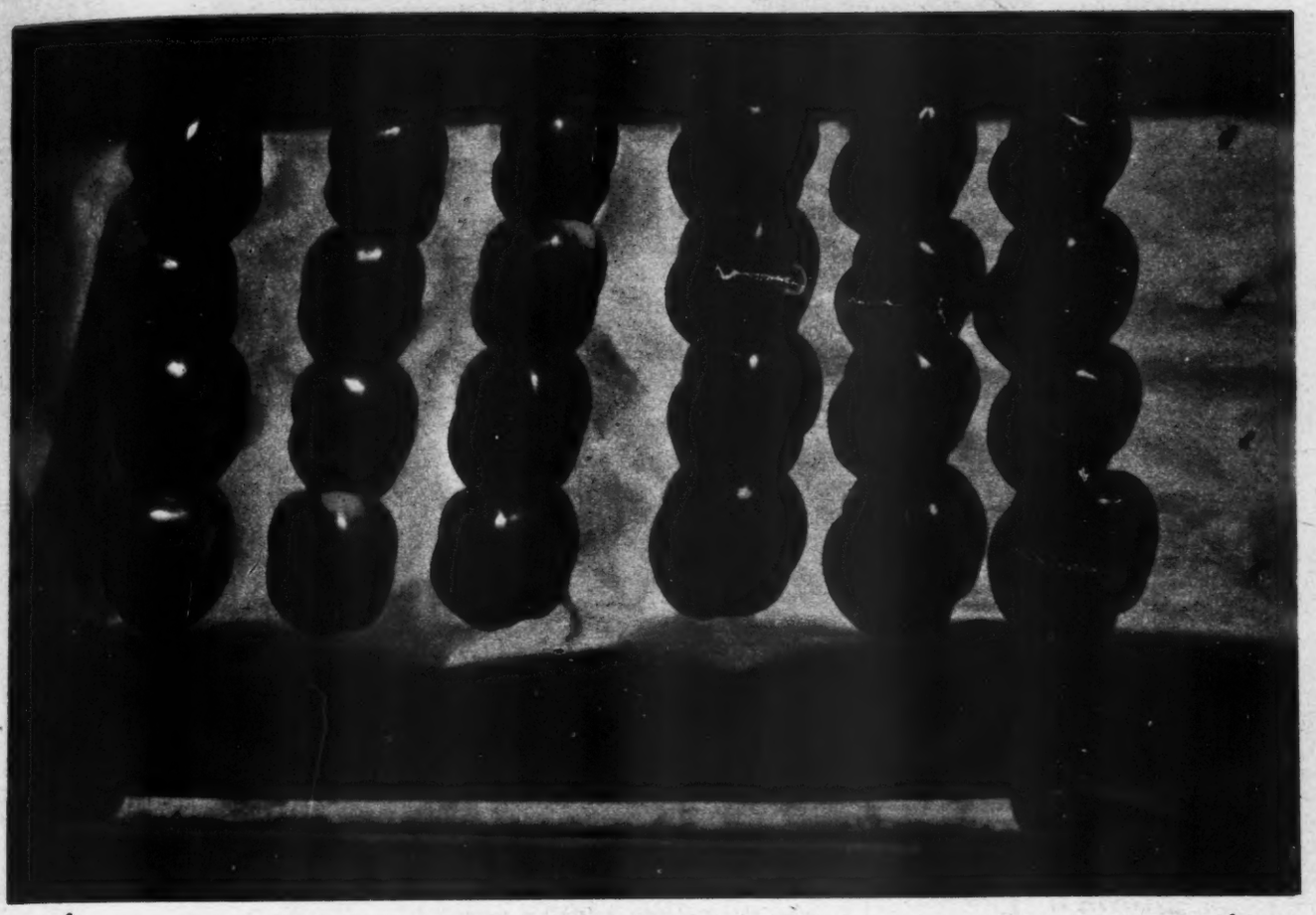
DIMITE is a powerful miticide. Only a pint or less per 100 gallons of water is required. All adults and nymphal mites hit by this spray are killed and in addition, the toxic residue will continue to kill for several weeks.

PRODUCTS OF SHERWIN-WILLIAMS RESEARCH

This amazing new miticide—product of Sherwin-Williams research—is compatible with most agricultural chemicals

SHERWIN-WILLIAMS

ACTUAL PHOTOGRAPH!



RESULTS WITH ANOTHER MITICIDE **RESULTS WITH DIMITE**

Note how DIMITE both increases Size and improves Color

WHAT DIMITE *DOES*

DIMITE is a remarkable miticide. Not only does it act as a contact spray killing all adult mites and nymphs present at the time of application, but it has outstanding residual effectiveness. For several weeks after an application the residue will be toxic to all mites contacting it. Thus it is not a disadvantage that DIMITE is not ovicidal in action—the residual effectiveness far outlasts the time required for mite eggs to hatch. Due to the specific action of DIMITE, the beneficial predators are not eliminated, but are left to help hold down potential aphid or mite outbreaks.

HOW DIMITE *WORKS*

DIMITE is an effective miticide formulation. It mixes readily with water and contains a selected wetting agent so that the bodies of mites are more easily wet with the spray. Due to the combination of excellent contact action, plus extended residual action, DIMITE may be applied either early in the season, before mites have built up to damaging numbers or it will act effectively later in the season to eliminate a serious infestation.

Trees sprayed with DIMITE have a healthy green color, much in contrast to trees on which mites have not been effectively controlled.

Contact your dealer immediately and give him your order as some of the chemicals used in Dimite are still in short supply and manufacture will be limited this season. Order now. Don't be disappointed.

COVER THE EARTH

AGRICULTURAL CHEMICALS

APHAMITE

Kills BOTH Mites and Aphids

APHAMITE is a wettable powder formulation of parathion—previously called AATP and E-605—the new insecticide which received so much favorable publicity during the past year.

APHAMITE is recommended especially for the control of aphids and mites and in addition has shown considerable promise for the control of several other fruit pests including the pear psylla and the red-banded leaf roller.

APHAMITE has a medium residual effectiveness, under some conditions has lasted several days, but not long enough to present a residue problem on food.

When used at the low dosage required for insect control, APHAMITE is safe on foliage.

Because of insufficient experimental data APHAMITE will be sold only on a restricted basis.

KILLEX

100% Hexaethyl Tetraphosphate

KILLEX is a proven contact insecticide containing 100% hexaethyl tetraphosphate for aphid and mite control. It is very useful in controlling outbreaks of aphids and mites. KILLEX does not have appreciable residual effectiveness nor ovicidal value so repeat applications will be necessary when populations build up again. This absence of KILLEX residue is beneficial when it is necessary to apply just prior to harvesting a food crop.

When applied as recommended, KILLEX is not hazardous to the applicator and under normal circumstances does not injure plant foliage.

THE DDTOLS—

A COMPLETE SHERWIN-WILLIAMS LINE OF DDT FORMULATIONS FOR EVERY REQUIREMENT

PRODUCTS OF SHERWIN-WILLIAMS RESEARCH

SHERWIN-WILLIAMS AGRICULTURAL CHEMICALS

Cover the crops that cover the earth

The DDTOL line is a complete line of DDT formulations designed to meet every agricultural need. No matter what the problem, if DDT is recommended, there is a DDTOL suited to do the job effectively, yet economically.

The research know-how of the world's largest manufacturers of agricultural chemicals insures that DDTOL formulations will give the maximum in performance. The DDTOL line truly serves to protect the food crop of America.

DDTOL 50% WETTABLE is a general purpose wettable powder containing 50% DDT. It is suited for use with either hand or power spraying equipment on fruit, vegetables and truck crops, field crops and for animal and premise treatment.

DDTOL VINE-SAFE 50% WETTABLE contains highly refined DDT for use either as a spray or dust in those situations where technical DDT may cause plant injury. It is especially recommended for use on melons, squash, cucumbers and other cucurbits and on tomatoes and beans.

DDTOL 50% DUST is a concentrate for the manufacture of lower percentage DDT dusts.

DDTOL 3%, 5% AND 10% DUSTS are free-flowing, ready-to-use dusts for general field and truck crop use.

DDTOL 25% EMULSIFIABLE contains 25% DDT in a water-mixable solution. It is especially suitable for airplane or low-gallonage spray application as well as by conventional equipment. Recommended for use on corn, seed alfalfa, and clovers, potatoes and for animal and premise treatment.

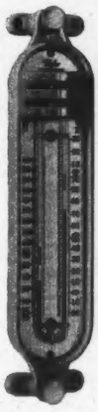
DDTOL 30% SOLUTION is a xylene solution containing 2½ pounds of DDT per gallon. This is not mixable with water. Recommended for use in airplane application for mosquito and forest insect control and for the manufacture of household and industrial pest control formulations.

THE SHERWIN-WILLIAMS CO.
Agricultural Chemicals Div. • Room 1255
101 PROSPECT AVE. • CLEVELAND 1, OHIO

SHERWIN-WILLIAMS AGRICULTURAL CHEMICALS

New Taylor Thermometers FIGHT FROST

New Taylor Indoor-Outdoor Thermometer tells both indoor and outdoor temperature, without going outdoors, regardless of snow or fogged windows. Easy to install. Tiny flexible copper tube connects with temperature sensitive bulb mounted outside window. Ivory or walnut plastic . . . **$7.50**



New Taylor registering "High-Low" thermometer helps predict frost by telling highest and lowest temperatures since last setting, plus temperatures now. Tiny steel-cored indicators inside tube stay put till reset with magnet. Helps locate orchards by detecting cold zones. Warns when to start smudge pots . . . . . **$10.**

Taylor Ship's Wheel Stormoguide helps foretell frost and local storms within next 12 to 24 hours. Much easier to use than an ordinary barometer because it gives detailed easy-to-read forecasts for each change in barometric pressure. Handsome walnut case, solid brass spokes, Stormoguide dial and exclusive altitude adjustment. **$15.**

Taylor Sling Psychrometer. The scientific instrument weather bureaus use to tell relative humidity. Complete with swivel handle, wet and dry bulb thermometers and protective copper case. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. (Prices slightly higher in Canada.)

$8.10

Taylor Instruments mean Accuracy First!

SPRING WEATHER

(*Continued from page* 18)

late current weather sequences to those of the past, using analogous situations as a basis for prediction. This method has been applied successfully for predicting monthly and seasonal weather trends and forms the basis for the estimates of coming spring weather appearing in this article.

Before discussing the weather to come, it may be useful to review the outstanding features of rainfall and temperature during the past months. In the interval between November 1, 1947 and February 15, 1948, there was an excess of rainfall in Alabama, Georgia, and northern Florida. Deficiencies were most extreme throughout California.

HANDY ANDY

"We just couldn't have done our spraying last year if our rigs hadn't been equipped with tracks," says Frank Trobaugh of West Frankfort, Illinois. Instead of letting his spraying equipment lie idle during the rainy season, because it couldn't get through the muddy orchard, Trobaugh replaced the tires with tracks. His spray rigs—Speed Sprayer, a homemade 1000-gallon sprayer, and a water supply wagon—were all equipped with tracks and did not bog down during the spraying season, thus saving a crop which might otherwise have been conquered by disease.

A review of temperature conditions during the same interval is illustrated in Chart I. The most striking feature is the fact that during this three and one half month period the average temperatures have been below normal throughout practically the entire United States, in contrast to the marked warmth of northern Canada and Alaska. This temperature pattern is reflected in the extreme cold that has invaded even the southernmost areas of our country, causing millions of dollars worth of damage to citrus crops and produce in Florida, Texas, Arizona, and California.

(*Continued on page* 36)

THE ANSWER TO YOUR **INSECT DISEASE WEED** PROBLEM

CHIPMAN DDT SPRAY POWDER
Kills Codling Moth

A wettable powder containing 50% DDT. Used in water suspension sprays. Also kills other fruit insects.

BENZAHEX W-12
Contains Benzene Hexachloride

A wettable spray powder containing 12% gamma isomer.

CHIPMAN PARATHION 15%
Controls Aphids and Mites

New, highly toxic insecticide in spray powder form. Can be applied at very low dosages.

HI-TEST LEAD ARSENATE
Controls Many Fruit Insects

Extremely pure form of di-ortho lead arsenate. Offers unequaled guaranteed chemical content as assurance of greater safety and high killing power.

BERAKO — ROTENONE SPRAY
Controls Cherry Fruit Fly

A water miscible spray containing 2½% *pure* rotenone. Also used for green peach aphids and certain other insects.

COPPER HYDRO
Controls Cherry Leaf Spot, Apple Scab

Neutral copper fungicide. Easy to mix —saves time and labor. Does not clog spray equipment. Combines with most insecticides. Used for all copper-controlled diseases.

CHIPMAN 2, 4-D WEED KILLER
Controls Many Broad-Leaf Weeds

Available in spray powder or liquid form. Used for both selective and general weed control.

CHIPMAN

INSECTICIDES
FUNGICIDES
WEED KILLERS

Write for Circulars

CHIPMAN CHEMICAL COMPANY
Dept. K, Bound Brook, N. J.

MICRO FLOTOX® WETTABLE SULFUR **WITH ORTHEX®** SPREADER-ADHESIVE

Apple scab will find lodgment on your fruit and trees wherever there is a loophole in your sulfur sprays.

The extremely fine particles of MICRO-FLOTOX Wettable Sulfur are dispersed by ORTHEX Spreader-Adhesive in a continuous film that checkmates scab completely. Spray thoroughly.

Low caustic reaction with high weather resistance are outstanding characteristics of this sulfur spray.

Use it, too, for brown rot control on peaches, sweet and sour cherries, prunes and plums.

Ask your ORTHO fieldman about

VAPOPHOS WETTABLE

This new ORTHO organic contact poison kills red spider mites, hatching mite eggs, most aphids and hatching aphid eggs, mealybugs and certain scale insects. It has both immediate and residual toxic effect on these pests.

ORTHO

CALIFORNIA SPRAY-CHEMICAL CORPORATION

RICHMOND, CALIFORNIA — ELIZABETH, NEW JERSEY

PORTLAND, OREGON, KANSAS CITY, MISSOURI DALLAS, TEXAS ORLANDO, FLORIDA LYNDONVILLE, NEW YORK SOUTH HAVEN, MICHIGAN BOISE, IDAHO

SPRING WEATHER

(*Continued from page* 35)

These rainfall and temperature patterns can be explained by studying the weather processes responsible for them. The extremes in temperature, as shown on Chart I, and rainfall are caused by the frequent occurrence of the following weather situation. The salient feature of this configuration, and one closely related to both the rainfall and temperature extremes under discussion, is the location of, and the inter-actions occurring between, air streams of cold polar origin and the warm, tropical or subtropical currents to the south. The positioning of the boundary between cold polar and warm tropical air, and the path and rate of movement of storm centers along this zone, determine the areas where rain or snow will fall. Storms on the Pacific Coast have moved rapidly southward from British Columbia causing snow and rain over the Canadian Rockies and the Rocky Mountain areas of the United States, but they have missed the California areas. As the storms move eastward after reaching Texas, the air from the Gulf of Mexico, heavily laden with moisture, is picked up in the circulation. When it is forced to override the very cold air currents prevalent over the eastern United States, copious rainfall or snowfall results. This weather process caused the heavy rains in the southern states this winter and the snow storm which inundated New York City as it moved rapidly up the Atlantic Coast the day after Christmas.

Following each storm passage, a surge of extremely cold air moved southward enveloping the entire United States in a frigid blast from the Arctic. The severe damage from cold in the produce and citrus areas in the United States this winter has resulted. These cold outbreaks have been a maximum during the latter half of January and early February. They also occurred late in November and during early December. A more normal weather pattern prevailed during the latter part of December and early January and provided a brief respite from the chilling effects of the polar winds. During this interval heavy rainfall, characteristic of more normal winter weather, occurred in Oregon and extreme-northern California, largely offsetting the previous deficiencies in moisture. However, these beneficial rains failed to extend southward into the parched agricultural areas of central and southern California or to the water storage basins of the Sierra Nevada mountains where the normal winter snowfall assures sufficient moisture for irriga-

(*Continued on page* 38)

Your ORTHO Fieldman says:

I'D LIKE TO TALK WITH YOU ABOUT GAMTOX® IT CAN SAVE YOU MONEY!

GAMTOX is a new ORTHO insecticide containing Benzene Hexachloride. GAMTOX is *outstanding* in the control of Plum Curculio on peaches.

GAMTOX gives effective control of Woolly Apple Aphis on pears and apples. GAMTOX has been used very successfully on plums and prunes . . . and on forage and field crops.

GAMTOX is also *outstanding* in the control of many insects on cotton as well as thrips on many other crops . . . and against many livestock pests.

GAMTOX is outstanding in the control of these "money-eating" pests:

Plum Curculio

Woolly Apple Aphis

Various Thrips

GAMTOX is available as either a spray or a dust:

GAMTOX Wettable No. 100
GAMTOX Dusts (available in various strengths)
GAMTOX-S Dusts (available in combinations with Sulfur)
GAMMACIDE Cotton Dusts (available in various strengths)

GAMTOX is broadly compatible with other insecticides and fungicides.

See your ORTHO Fieldman for further information about GAMTOX and for recommendation regarding application and use in your area.

CALIFORNIA SPRAY-CHEMICAL CORP.

Richmond, California • Elizabeth, New Jersey • Portland, Oregon • Kansas City, Missouri • Dallas, Texas
Orlando, Florida • South Haven, Michigan • Lyndonville, New York • Boise, Idaho

ORTHO
SCIENTIFIC PEST CONTROL

Dependable

CHAMPION

America's Favorite Spark Plug

As March heralds a new farming season, prudent farmers everywhere check and repair their power farming equipment to be ready for the busy months ahead. A cardinal rule is to check spark plugs in cars, trucks, tractors and stationary engines, for their condition will largely determine operating efficiency and economy. If new ones are needed, insist on dependable Champions—America's Favorite Spark Plug—because they make every engine a better performing engine. Champion Spark Plug Company, Toledo 1, Ohio.

FOLLOW THE EXPERTS

DEMAND NEW DEPENDABLE CHAMPIONS FOR EVERY FARM ENGINE

Listen to the CHAMPION ROLL CALL . . . Harry Wismer's fast sportscast every Friday night, over the ABC network

SPRING WEATHER

(*Continued from page* 36)

tion and other water uses in the central valley areas of California during the long dry summer months.

With this background of unusual and extreme weather during the past few months and last year, the fruit grower is confronted with serious problems this spring. In California the prime consideration is water; in Florida and Texas the citrus and produce industry will be concerned with the possibility of further freezing weather. In the remainder of the country orchardists will be scanning the skies for signs of further cold weather following blossoming, when the fruit is in a formative stage. In the Pacific Northwest the cherry grower wonders whether spring rains will come just as the fruit matures. In fact, the questions which arise during spring are so numerous that it would be impossible to answer each one individually in the limited space available here.

However, Charts II and III have been prepared in the hope that their interpretation by the individual grower will be of assistance in determining how the weather during the next three months will operate to his benefit or detriment. This information may be helpful in combating adverse developments or, if favorable, may act as a sedative to those who have experienced grave concern over conditions

(*Continued on page* 57)

HANDY ANDY

With their homemade hole-digger, John and Burnette Hersey of Casnovia, Kent County, Michigan, can dig 500 holes in a morning. An auger was made in their farm shop out of old plow and disc parts and fastened on to an old Dodge rear end which was placed upright and attached to the tractor frame. The drive shaft was attached to the power take-off completing the mechanism. The holes made are from 18 to 20 inches wide and as deep, and the dirt is thrown up on the side in a neat loose pile.

Here's how "Fermate" & "Zerlate" Fungicides help you HEAD OFF DISEASES

CLEAN FRUIT that pleases the buyer requires control of diseases all season long—at bloom, during growth, and even on the ride to market. Du Pont "Fermate" and "Zerlate" are formulated to give you exceptional disease control throughout.

It's a ticklish time when scab spores are settling on new apple buds . . . or when brown rot attacks peach or cherry blossoms. But you have a safe, sure means of control with Du Pont "Fermate."

"Fermate" prevents rot and scab from getting a start. And just as important, this organic fungicide is so mild that it does not harm the fragile blossoms or the tender opening buds.

For the same reason, Du Pont "Fermate" is exceptional in the control of scab and many other fungous diseases throughout the danger periods. With "Fermate" you get full protection of your fruit. Even in hot summer weather, it does not burn the leaves or cause chemical russeting of fruits.

"Fermate" is a standard disease control for apples, pears, cherries, peaches, plums and grapes, as well as currants and some small fruits. "Fermate" is safe for control of leaf spot on both sweet and sour cherries. It can be mixed with most other spray materials, and is the only available fungicide safe to use with oil-lead arsenate or oil-nicotine sprays.

Where brown rot threatens at harvest time, many growers of stone fruits apply "Zerlate" just before picking or on the packing table. The light-colored residue of "Zerlate" makes it hardly visible on peaches or yellow cherries . . . and the fruits stay free of brown rot all the way to the consumer.

You'll find *these Du Pont fungicides give you better disease control and healthier trees. For full details on these and other Du Pont pest control products, see your local Du Pont dealer or serviceman. Or write to the Du Pont Company, Grasselli Chemicals Dept., Wilmington 98, Delaware.*

DU PONT *Pest Control Products*

INSECTICIDES: DEENATE* DDT, LEXONE* and MARLATE* Insecticides, KRENITE* DinitroSpray, LORO* Contact Insecticide, Cotton Dust No. 10, Cryolite, Lead Arsenate, Calcium Arsenate, Nicotine Products, Lime Sulfur, Phenothiazine—Lead Arsenate Mixture, Paris Green

FUNGICIDES: ZERLATE*, FERMATE*, and PARZATE* Organic Fungicides, COPPER-A Fixed Copper, SULFORON* and SULFORON-X* Wettable Sulfurs, Sulfur Paste, KRENITE* Dinitro Spray, Bordeaux Mixture.

OTHER MATERIALS: 2,4-D WEED KILLERS, AMMATE* Weed Killer, Du Pont Spreader-Sticker, PARMONE* Pre-Harvest Fruit Drop Inhibitor, Spray Adhesive.

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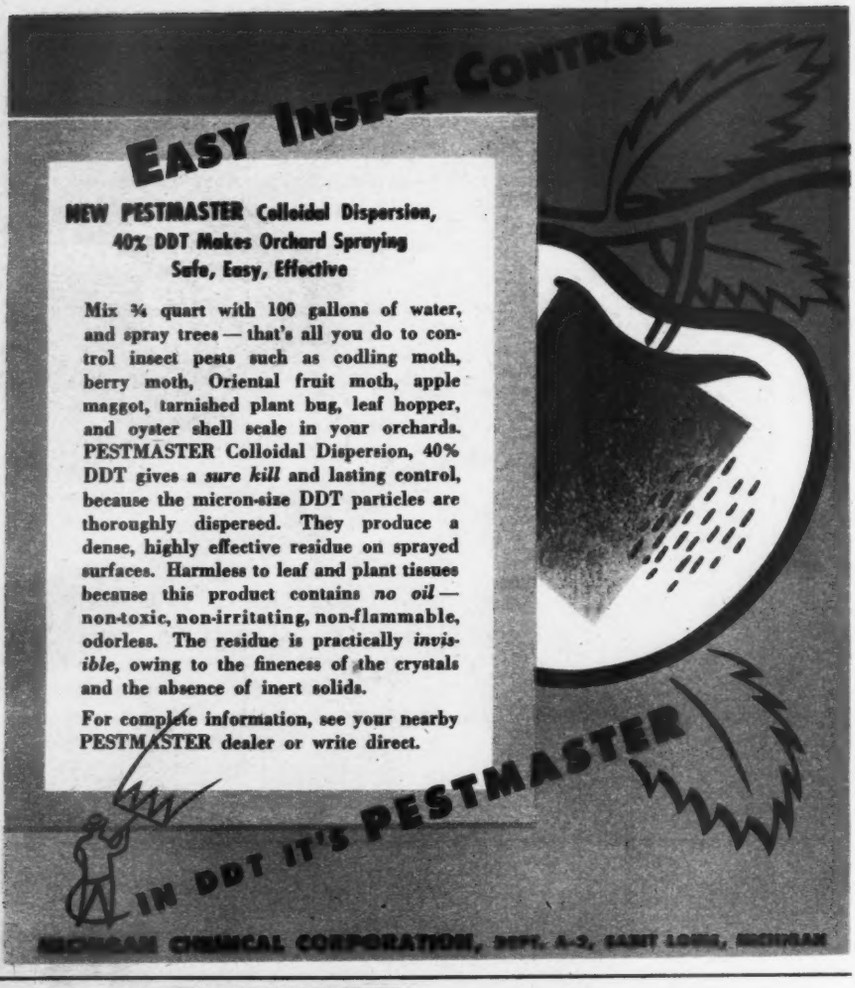
BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*


EASY INSECT CONTROL
NEW PESTMASTER Colloidal Dispersion,
40% DDT Makes Orchard Spraying
Safe, Easy, Effective
Mix ¾ quart with 100 gallons of water, and spray trees — that's all you do to control insect pests such as codling moth, berry moth, Oriental fruit moth, apple maggot, tarnished plant bug, leaf hopper, and oyster shell scale in your orchards. PESTMASTER Colloidal Dispersion, 40% DDT gives a sure kill and lasting control, because the micron-size DDT particles are thoroughly dispersed. They produce a dense, highly effective residue on sprayed surfaces. Harmless to leaf and plant tissues because this product contains no oil — non-toxic, non-irritating, non-flammable, odorless. The residue is practically invisible, owing to the fineness of the crystals and the absence of inert solids.
For complete information, see your nearby PESTMASTER dealer or write direct.
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TENNESSEE
"26"
FOR
CHERRY
SPRAY
Quality Fungicides
A neutral water insoluble copper compound of extremely fine particle size. Tennessee "26" Copper Fungicide gives better covering and longer toxicity, reduces injury to plants, economical to use. Especially effective for control of Cherry Leaf Spot.
DEMAND
That Tennessee Tri-Basic Copper Sulphate be used when buying copper dust or spray mixtures.
For Literature on Fungicides, write
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Grant Building, Atlanta, Ga.
TENNESSEE TC CORPORATION
Atlanta, Georgia
TENNESSEE CORPORATION
Lockland, Ohio

THE STORY OF MAN-MADE WEATHER

(*Continued from page* 17)

cents a pound.

In summarizing the first year of activity in the field of cloud modification, however, it is best to review briefly the basic factors which seem to be of importance if any effect is to follow the introduction of dry ice pellets into a cloud. To start with, at least a part of the cloud must consist of liquid water droplets colder than 0°C. Wherever such supercooled droplets exist, it is a simple matter to produce large numbers of ice crystals in that region. It can be shown quantitatively in the laboratory that a pellet of dry ice the size of a pea is capable of producing at least 10^{16} ice nuclei. Whether all, or only a minute fraction of these, grow to snow crystals when introduced into a cloud depends on such things as the available moisture, the convection in the air, the efficiency of dispersal of the nuclei, and similar factors. To emphasize the tremendous numbers of nuclei which are available when a dry ice pellet is introduced into a supercooled cloud, note that if each of the 10^{16} ice nuclei grew to the size of a small snow crystal, they would amount to 300,000 tons of snow!

If any appreciable precipitation is to fall from a seeded cloud, a number of favorable conditions must be present. For example, unless the humidity of the air below the cloud is fairly high, the precipitation may evaporate before it reaches the ground. It is of even greater importance that there be a continuing supply of moisture flowing into the affected region to continue the precipitation, for there are only about 0.15 inches of condensed moisture in an average cloud which has a vertical thickness of a mile.

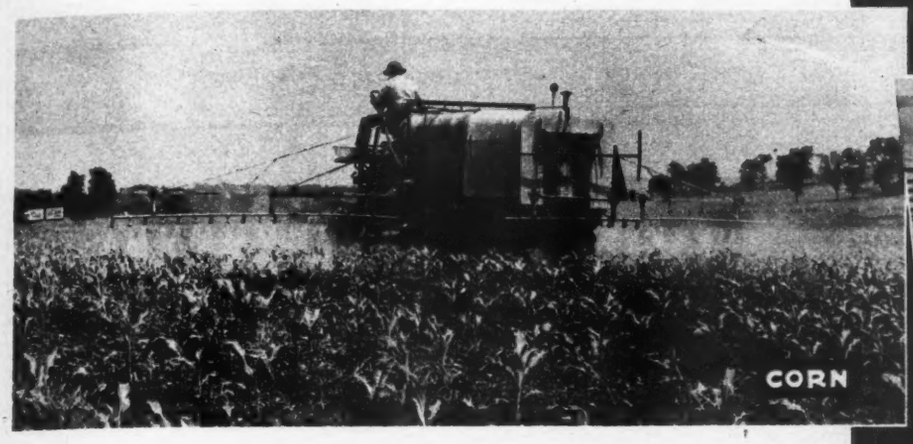
A sober realization of the facts emphasizes the point that much work must be done before more than local showers can be produced by man using dry ice or any other material in the clouds of the atmosphere. Unfortunately, when rain is needed to relieve a drought condition, there is often nothing but day after day of cloudless skies over the affected region. However, it should be mentioned that sometimes it should be possible to trigger off a considerable shower from a towering cumulus before the precipitation cycle develops by natural processes. It should be possible, at times, to initiate the development of a snow or rain storm at a specific location when nature permits the development of a large area of

(*Continued on page* 42)

Your sprayer dollar...

BUYS MORE

than ever before!



Today a Hardie High Pressure Sprayer is the most useful machine on the farm. It serves a wide variety of purposes—all of them important. All of these different spray applications are possible with the same Hardie Orchard Sprayer fitted with the inexpensive specialized booms or guns for each particular job. Spray your corn for weed and borer control, your cattle and sheep for grubs and ticks, your stables and pens with DDT. Use your Hardie Orchard Sprayer for water painting, fire extinguishing, and for cleaning out stables and poultry houses with high pressure stream. Write for the Hardie 1948 Catalog which shows you how to make a sprayer do a dozen different jobs.

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Hardie
Dependable Sprayers

PERFECT AGITATION · COMPLETE LUBRICATION

THE STORY OF MAN-MADE WEATHER

(*Continued from page* 40)

supercooled clouds.

The following is a list of some of the experiments conducted during the last year which are representative of the general advances made in cloud modification:

November 13, 1946—Initial experiment by the author over Berkshires in Massachusetts, converting a four-mile supercooled strato-cumulus cloud into snow flurries using six pounds of granulated dry ice.

November 21, 1946—Conversion by the author of supercooled ground fog to snow crystals by seeding with dry ice. Schenectady, New York.

December 20, 1946—Production of snow by R. Smith-Johannsen in supercooled orographic cloud on summit of Mt. Washington, New Hampshire. Seeding with liquid CO_2 from tower of Mt. Washington Observatory.

December 20, 1946—Production of extensive snow area by the author in supercooled stratus cloud by seeding in base of supercooled overcast with dry ice and liquid CO_2 in region north of Mohawk Valley in New York.

February 5, 1947—E. B. Kraus and P. Squires. Production of rain in stratocumulus by seeding supercooled cloud at 23,000 feet with dry ice and detection of effect by radar 100 miles east of Sydney, Australia.

February 6, 1947—Production of snow by R. E. Falconer and V. F. Clark in supercooled orographic cloud at 6,200 feet using silver iodide flare. Mt. Washington, New Hampshire.

PRODUCING FIGS IN ILLINOIS

In a climate which is normally too severe for raising figs, Charles Pirrera of Springfield, Illinois produced a successful crop of figs. He did this by burying the tree tops in a shallow ditch as soon as they shed their leaves. To accomplish this he cut off half the roots and bent the trees over. Pirrera began his hobby four years ago and now has four trees, the tallest of which is seven feet. Shown in the photo above is the last of this season's fig crop being admired by Michael Foley, Pirrera's grandson.

April 4, 1947—Colonel E. S. Ellison and L. R. Richards. Production of rain in supercooled stratus cloud at 10,000 feet in Oregon.

April 7, 1947—Personnel of Project CIRRUS. Joint Army-Navy-Air Forces-General Electric project produced 45-square-mile geometric hole in supercooled stratus cloud over Adirondack Mountains in New York to obtain quantitative information on effect of dry ice seeding methods.

July 16, 1947—A. Hoff and H. L. Mott. Production of rain from cumulus cloud near Phoenix, Arizona, by seeding cloud at 20,000 feet with dry ice.

September 23, 1947—Production of rain at 9,500 feet by L. B. Leopold and M. Halstead in above-freezing cumulus cloud using dry ice over island of Molokai in Hawaiian Islands. Results interpreted by Dr. Irving Langmuir as start of chain reaction in new precipitation theory advanced in paper delivered before the National Academy of Sciences, November 17, 1947.

October 13, 1947—Personnel of Project CIRRUS in dry ice seeding flight and cloud study of hurricane

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Magnetic "70" Concentrated Sulphur Paste

Get your supply early of this popular, economical scab and brown rot spray. Growers everywhere had great success with it last year and the new, improved product is bound to be in short supply this year.

Magnetic "90" Micron Measured Dusting Sulphur

Stauffer's new micron-sized sulphur whose particle size of between 4 and 5 microns surface average diameter assures a free-flowing, non-lumping sulphur dust.

Magnetic "95" Micron Measured Spraying Sulphur

Stauffer's micron-measured Spraying sulphur containing 95% sulphur and having a particle size between 4 and 5 microns surface average diameter. Get your supply while still available.

DDT

Stauffer offers a complete line of DDT sprays and dusts including: DDT Technical, 50% DDT dust and wettable powder concentrates, and DDT mixed in varying proportions with sulphur and other carriers.

BHC

(Benzene Hexachloride)

Chlorinated Camphene

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"King" 350 miles east of Jacksonville, Florida, at 25,000 feet.

September-October, 1947—Production of snow and rain by C. L. Chipman and G. G. Sampson in vicinity of Prosser, Washington, in series of flights.

October-November, 1947—Series of experimental flights over western Kansas by C. Barhydt and J. Berkeley, producing snow and rain areas.

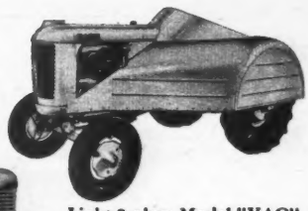
Many other experiments might be listed, but it is believed that the above examples illustrate some of the significant advances in techniques and materials during the last year. The list indicates the widespread and active interest that has developed in the general subject. Many experiments have been carried out in other countries which have not yet been reported in sufficient detail to permit analysis.

What the future holds is not easy to predict. Caution must be exercised in analyzing experiments of this kind. It should be remembered that natural processes generally produce precipitation when suitable cloud systems occur. Much careful study of naturally occurring precipitation must be made to differentiate properly between natural and artificial effects that develop in the free atmosphere. Because of the vast areas involved, new observational techniques must be developed and mastered if a worthwhile evaluation is to be realized.

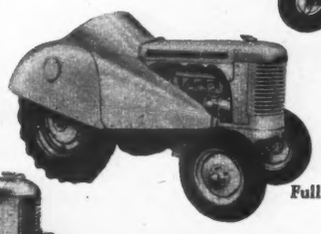
The elimination of hail storms, the modification of thunder storms, the removal of icing conditions in supercooled clouds, and the possible increase in precipitation under certain unstabilities of the atmosphere seem to be some of the benefits that may result from the present activity in the field of experimental meteorology. This activity is rapidly spreading throughout this country and into many other parts of the world.

It is very likely that the next year or two will disclose the limitations of the present techniques involving the use of dry ice, silver iodide, water, or "wet" ice. As is always the case, however, when careful research is conducted, all sorts of unexpected occurrences will be observed, which if properly recognized, evaluated, and exploited will lead to newer techniques which will undoubtedly lead to a better understanding and quite likely a certain limited control of the weather. Whether this greater knowledge of weather will be for the benefit or further confusion of mankind will depend to a great extent on man's willingness and readiness to cooperate in making the whole world, as well as his own local region, a better place for living.

THE MORE YOU LOOK . . .

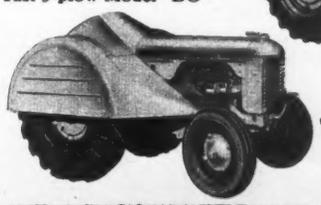


Light 2-plow Model "VAO"



Fast 3-plow Model "DO"

Full 2-plow Model "SO"



THE MORE YOU'LL LIKE A CASE

It Really Gets Around in Groves

● When you start down the row with a harrow, grain drill or spray rig, you'll like the sure-footed way a Case tractor holds its steady speed and pull. You'll like the way its eager-powered engine throttles down for turns without gear shifting. The more tractors you have used, the more you will notice how many ways a Case saves your time, gets ahead with your work.

You'll also like the ENDURANCE of a Case tractor —the way it runs year after year with low upkeep and good fuel economy, gives you extra years of use from your investment. That's why men with the most tractor experience have the highest respect for Case Orchard and Grove Tractors. See your Case dealer for full information and chances of delivery on the model that fits your crops, implements and acreage.

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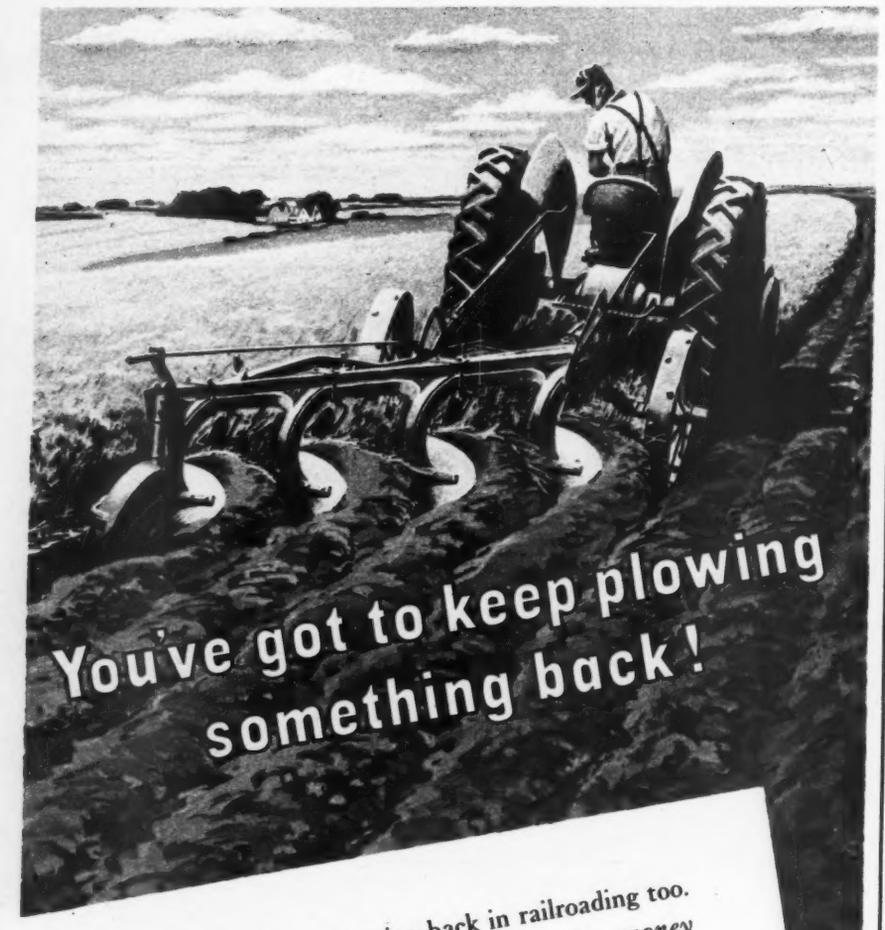
CASE

A Heavy-Duty Offset Harrow recently added to the Case line of orchard implements is the Model "CO." It has anti-friction bearings, factory-sealed with lubricant to last the life of the heat-treated blades. It has no square corners on its snug-fit frame, no parts higher than the blades. It has adjustment to prevent "tracking." Send for "CO" circular; also catalog on any size tractor, folders on any implements you need. J. I. Case Co., Dept. C-13, Racine, Wis.



You've got to keep plowing back in railroading too.

In railroading, you've got to keep plowing *money* back. New money is needed continually for new, more efficient rolling stock, for better roadbed and tracks, improved signals. New money is needed for a thousand improvements in plant and equipment—to insure better and better service — to keep open national markets for your products — to do a better job for you.

The ability of the railroads to obtain this money depends upon railroad earnings. And adequate railroad earnings depend upon rates and fares in line with today's costs of producing freight and passenger transportation.

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For everybody's business is linked vitally to efficient, economical railroad service. Everybody's business — including yours!

Association of American Railroads

WASHINGTON 6, D. C.

NATIONWIDE FRUITS

(*Continued from page* 25)

increased shrinkage control. McFadden also states that because most people don't know how to eat persimmons, there is a potential market for this fruit which is still to be realized.

STRAWBERRIES

● **Removing the mulch** from strawberry beds should be done as late in the spring as possible according to Wesley P. Judkins of the Ohio Agricultural Experiment Station. This will prevent undue damage by frost and delay the blooming period. When the green color fades and the leaves begin to turn yellow, the mulch should be removed from around the plants. However, some straw should be left between the rows to help retain moisture, prevent weeds from flourishing, leave a good working surface for harvesters, and keep the maturing berries from coming in contact with the soil. A little straw may also be left around the plants so the fruit won't be splashed with dirt during the rainy season.

● **A new strawberry** variety which is similar to, but better than, its parent, Fairfax, according to the inventor, O. E. Felten, produces large wedge-shaped berries which are medium light in color. The plants are large and produce a great deal of fruit which is juicy with a tart flavor and ships well because of firm flesh.

● **According to George M. Darrow** of the U. S. Department of Agriculture, the disadvantages of planting strawberries in the fall out-weigh the advantages. More plants will have to be set, the crop is usually very small, the plants are more expensive than in the spring, and it costs more to handle a fall planting. However, if the plants are easily obtained and the grower is prepared to mulch for two winters, he will have a head start with runners early in the spring, especially if the weather has been wet, delaying spring planting.

● **When the weeds** are small in strawberry beds, they can be eliminated by 2,4-D according to specialists at Michigan State College. The spray is applied at one-half its usual strength so as to leave the plants uninjured. Because the flowers and buds are sensitive to this weed-killer, the spray in a second-year bed should be applied after harvesting. The first year bed may safely be sprayed at any time since no crop is harvested during that year.

BLUEBERRIES

• **A disease which** has infested blueberries in Michigan and New York and has caused losses of more than 50 percent of last year's crop in the latter state is the mummy berry disease. The infected fruit dries up after turning brown or cream in color and becomes a total loss. Spraying has not been successful as a control measure, but scientists at the New York State Agricultural Experiment Station have found that removal of the wilted shoots each day is a fairly good method. In areas of larger plantings sweeping or raking the soil under the bushes, along with frequent cultivation in the spring, may prove effective because it will disturb the spores which winter over in the dropped fruit and spread the disease.

GRAPES

• **The use of Bordeaux** mixture has caused spray injury in many New York vineyards with the leaves drying and turning yellow prematurely. Injury also took the form of slightly smaller fruit which did not ripen so quickly as that on unsprayed vines. Copper, which is the principal effective ingredient of Bordeaux mixture, seems to be the cause of this injury according to tests conducted during the last seven years at the New York State Agricultural Experiment Station. To stop the injury, lime was added to the copper spray mixture, but this also lessened its effectiveness in controlling diseases. Where black rot is the main concern, the new materials, Fermate or Karbam, will give excellent control, but the same mixture will not control downy or powdery mildew.

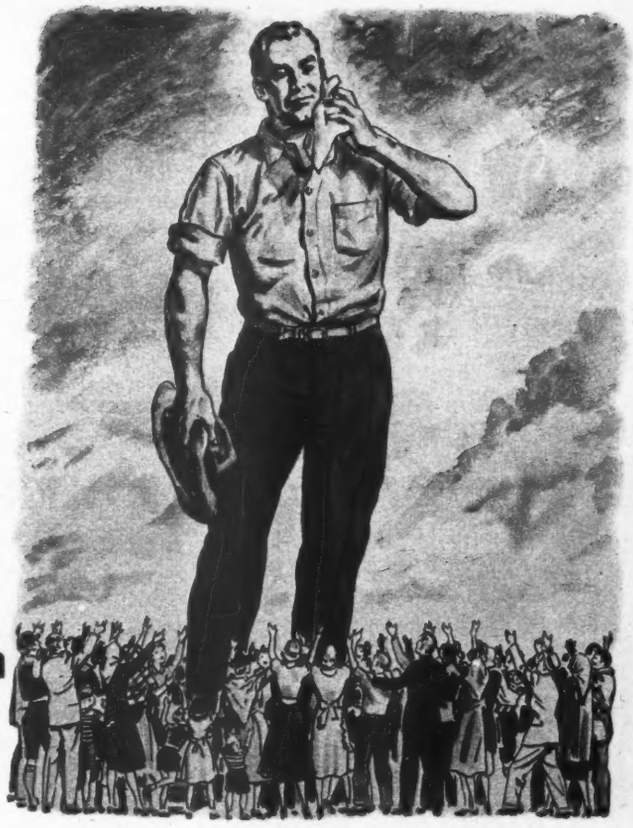
• **Because the Concord** grape does not ripen evenly when grown in the southwest section of the United States, its market value there has sharply declined. Various cultural methods have been tried with this very popular variety by the Oklahoma Agricultural Experiment Station, but they have met with no success in attaining even color. The experts agree that the only solution to the problem is the planting of varieties adaptable to that region and, accordingly, are now testing plants for that purpose.

CITRUS

• **In a recent survey** conducted by the Farm Credit Association under the Research and Marketing Act of 1946, chain-store and wholesale-grocery buyers voted overwhelmingly for the use of a better quality of citrus

(*Continued on page* 46)

The eyes of the world are on the American farmer



THE eyes of the whole world are upon the American farmer. The people cry for food, and he is the world's greatest food producer.

He is doing a tremendous job. Using more science, more machines, more brains, he gets better results than ever before.

Farmers today not only use more equipment, but keep their equipment in better shape—and buy what it takes to do it.

For instance, more and more farmers insist on getting Quaker State HD Oil for their trucks, tractors, and other motorized equipment.

They know that Quaker State HD Oil lubricates better, lasts longer—resists heat and pressure better. Skillfully refined from 100% pure Pennsylvania grade crude oil, every drop in every drum can be depended upon to stand up under the hard grind of farm service.

It keeps engines cleaner, too—gives more protection to equipment, more value for the farmer's dollar.

In no other application can Quaker State H D Oil be better employed! Order a drum today.

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HD OILS
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CLEAN UP TREES FOR SPRING GROWTH

with the complete dormant spray

CONTROL many insects and diseases that have over-wintered on your trees, shrubs and evergreens by spraying with Scalecide. This *complete* dormant spray is the most effective means of killing scale, red mite, aphis (delayed dormant), bud moth, case bearer, pear psylla and over-wintering codling moth. Scalecide also aids in the control of brown rot cankers, collar rot and peach leaf curl. Apply just before the foliage starts in the Spring. One gallon makes 16 gallons of spray. One gallon, $2.00; one quart, 85c. Order from your dealer today.

Kill more garden pests—and more kinds —with D-X Spray. Combines rotenone, pyrethrum and DDT for extra killing power.

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SPRAY CATALIZER • SULFOCIDE • SURFISPRAY
D-X SPRAY • PRATT'S 622 INSECT REPELLENT

NATIONWIDE FRUITS

(*Continued from page* 45)

fruits to be canned as one way to expand markets and increase distribution efficiency. Maintenance of better quality of fruit, lowering of packing and distribution costs, and strict control of quality and sanitation in the processing plant were suggestions for the processor to help increase the market in canned citrus fruit juices. Price and quality, however, were the greatest concern of these buyers who want to establish an educational and merchandising program which will insure success in the industry.

CHERRIES

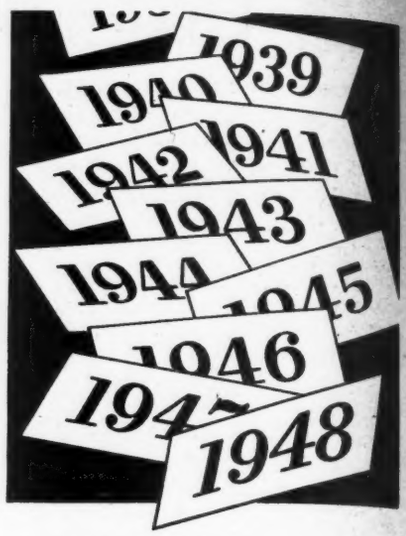
● **Experiments on the** control of the black cherry aphis have been made by the New York and Ohio Agricultural Experiment Stations, and both have found dormant spraying with DN compounds to be the most effective. The spraying should be done before the buds open when the eggs can be seen and reached by the spray. If the insects are allowed to progress, the size and flavor of the fruit will be affected, and a secretion will appear on the fruit making it sticky and unattractive for marketing.

DN compounds are also effective in controlling the cherry casebearer, a comparatively new pest. These insects eat blossoms and feed on the leaves and fruit causing severe damage to fruit and foliage. As with the aphis, a spray application must be made before the larvae migrate to the opening buds.

NUTS

● **The addition of** a walnut processing plant in Rockcastle County, Kentucky has increased the incomes of farmers in several counties with one grower selling nuts worth $1,276 according to the County Agent. The plant can handle 3,000,000 pounds of nuts a year and is said to be the largest of its kind in the United States.

● **There are three** new varieties of pecans suitable for South Louisiana which are available for planting this winter; they are Desirable, Jennings, and Sabine. All are heavy bearers and begin yielding pecans when only a few years old. The three grow vigorously and are fairly resistant to disease. The nut of the Desirable variety is average-sized, easy to shell, attractive, and of moderate quality. That of the Jennings is also of medium size with a fairly thick shell and fine-flavored kernels. The Sabine variety produces nuts which are fairly large but not very attractive.



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HERE'S WHY . . .

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Vigoro is complete, scientifically balanced plant food . . . plant food backed by over a quarter of a century of laboratory research and countless tests under actual growing conditions.

Vigoro supplies the food elements fruit trees must have to grow bigger yields of firmer, tastier fruit . . . the kind that commands top prices.

We want you to know the difference Vigoro makes. Write for further information. Send your name and address to:

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Everybody likes Alcoa Cryolite Insecticide *It's Selective!*

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"—Active ingredient—90%, sprays or dusts freely. Negligible abrasive action on equipment."

"—Economical and safe to use on delicate foliage. Not acutely poisonous to humans."

FREE-Dusting and Spraying Chart Sent on Request

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Packed in 50-lb. bags, 6-lb. bags and handy 1-lb. shaker cans

Alcoa Cryolite Insecticide

WEATHER INSTRUMENTS

(*Continued from page* 30)

good air circulation. The probable low temperature for the night will be indicated if readings are taken at sundown. For this purpose reference must be made to tables. The temperature of the wet bulb thermometer is noted and subtracted from the temperature of the dry bulb thermometer, then multiplied by a factor which has been determined for that particular dry bulb temperature. Here is an example: Dry bulb, 40° and wet bulb, 35°. 40° minus 35° equals 5°. Factor of 40° is 2.29. 2.29 times 5° equals 11.45. 11.45 from dry bulb reading of 40° equals 28.5°.

From this example a temperature of 28½° F. can be expected before morning, which gives a person an opportunity to protect material or property which might be otherwise destroyed or affected. Mechanical hygrometers (those which indicate directly on a dial) are very unreliable for outdoor work and should never be considered where accurate results are expected.

Many types of thermometers are available which indicate the maximum and minimum temperatures, but the most sensitive and practical one is the pattern developed by Mr. James Six, of Canterbury, England, and which is still known by his name, "Six's".

It is made of a glass tube in "U" form with a thread of mercury in the tube's bore. The indications of temperature variations are caused by an expansion or contraction of creosote-filled bulbs which are at the tops of the "U". Above each mercury column is a small, blue glass index which "floats" in the creosote but is so skillfully made and fitted that, should the mercury rise in either column, it will carry the index with it and leave it at that point.

Any change in temperature acts upon the left side creosote-filled bulb. An increase in temperature causes the liquid to expand, thus driving the thread of mercury up higher in the right hand tube and carrying the index with it. When the mercury thread recedes, because of the creosote bulb's chilling, it leaves the index at the point reached by the mercury when it indicated its greatest heat and rises in the left hand tube carrying the index with it, thus indicating the greatest cold. The maximum and minimum temperatures are read on the graduated and figured scale to which the "U" tube is fitted. The indices are readily "set" to the level of the mercury thread in each side by a magnet supplied with the instrument.

(*Continued on page* 50)

AT LAST YOU CAN
ERADICATE SCAB!
PURATIZED
AGRICULTURAL SPRAY

is a remarkable new organic fungicide which not only gives you reliable *protection* against the ravages of apple scab—it also *gets rid of it fast!*

For a low-cost spray program and a high degree of scab elimination get Puratized protection *now*, with this early spray through the first cover application.

Puratized Agricultural Spray is economical — 1 pint to 100 gallons of spray — and easily handled. Consult your local dealer or write today for full details on this amazingly efficient product!

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67 picturesque acres, 30 in heavy bearing nine-year-old apricot trees producing an income beyond the cost of operation and maintenance.

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BRISTOL — best all around mid-season variety.

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BLUEBERRIES — improved cultivated varieties, delicious fruits, large as grapes.

Boysenberries, Currants, Gooseberries, Grapes, Strawberries, Fruit Trees, Dwarf Fruits, Hardy Nuts, Ornamental Fruits, etc. Write today for Complete Catalog and Cultural Guide.

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Easy Terms - Write Today

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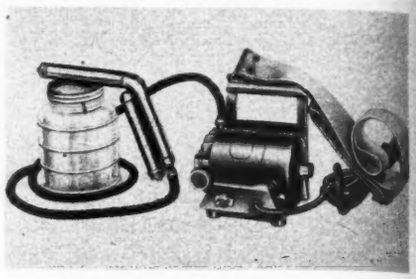
NEW

PAINT SPRAYER

Here is a new, portable electric paint sprayer. The H. D. Hudson Mfg. Co., manufacturer, claims that even amateurs can produce professional results when using it with paint, enamel, varnish, lacquer, or stain. There is an adjustable spray head for these various applications, and the flow of paint can be controlled by a shut-off valve.



RUBBER HARVEST MAT

To save apples from undue bruising during harvesting, the U. S. Rubber Co. has developed a soft rubber mat. Made of a spongelike rubber composed of millions of tiny nitrogen-filled cells, the mat "gives" and cushions the fruit. Demonstrations have been made in which eggs were dropped onto the mat from an 11-story building without breaking.

HELICOPTER CANOPY

Helicopters having a cockpit with a convertible canopy are now being manufactured by Bell Aircraft. These are general utility planes which are equipped with accessories for crop dusting and spraying.

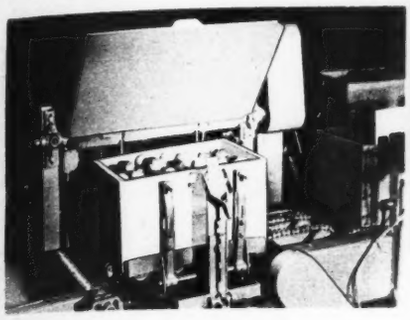
NEW ENGINE

A compact design which gives more power with less weight and bulk characterizes the new Clinton engine. It is light weight, about 47 pounds, giving a wider range of applications for portable equipment, and several bases have been provided for special mounting on various types of equipment.

- PAINT SPRAYER
- FIELD BOX DUMPER
- NEW ENGINE

FIELD BOX DUMPER

Another invention for saving fruit from bruising during harvesting is a fully automatic field box dumper which is electrically controlled. The machine is now being produced by the Food Machinery Corp.



BOOKS AND BULLETINS

- **A chance to design** your own car is provided on a colorfully-illustrated tally sheet originated by the Ford Motor Company. The questionnaire has price tags affixed to various types of bodies, engines, trim, accessories, etc., so that the automobile owner can decide on the features he wants in his model car and at what approximate cost.

- **A new sound film** in natural color, "Agriculture's New Conquest," which is now available, is the story of cleaning weeds out of farm crops. The movie was filmed in farm fields throughout the country and shows the use of Agricultural Weed-No-More, a product of the Sherwin Williams Co. A booklet to supplement the film explains the use of this chemical and the story of its development.

- **The technique** of sealing corrugated and solid fibre containers for shipment is explained in a booklet by J. D. Malcolmson of the Robert Gair Co.

- **"Practical Land Clearing"** is a booklet which shows, pictorially, the primary operations and types of equipment used in modern land clearing. This release is available from the Caterpillar Tractor Co.

- **Illustrating and** describing nine types of Standardized Units is Bulletin No. 61 of the Standard Conveyor Co. which is free and available on request.

Dependable Protection for Peach Crops at a glance

Peach Crop Enemies	Niagara Materials for Peach Protection
Peach Scab and Brown Rot	Kolosprays and Kolodusts
Curculio	Oil dusts
Oriental Fruit Moth	Niatox dusts and sprays (containing DDT)
Tarnished Plant Bug	BHC dusts and sprays
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PLUS a Niagara Cyclone Duster

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Designed for Greater Utility
ALWAYS READY FOR ANY JOB

Dobbins high-pressure power sprayers are available on skids or wheels, with or without rubber tires. The model illustrated above can be easily placed in the back of a pick-up truck, wagon or trailer. It is ideal for orchard spraying or for greenhouse and nursery use as a stationary unit. Tank sizes available from 25 to 200 gallons . . . with pump discharge capacities ranging from 1½ to 6½ gallons per minute.

See these power models and Dobbins hand sprayers and dusters at your hardware or garden supply store.

DOBBINS MANUFACTURING CO., Dept. 306, ELKHART, INDIANA

Dobbins Superbilt
SPRAYERS · DUSTERS

SMALL POWER MODELS FOR EVERY PURPOSE

In the United States, Canada, and throughout the world, Briggs & Stratton maintains a vast network of *Authorized Service Stations*, operating under factory supervision and policies. These stations offer complete engine service—unequalled in the industry—mechanics, factory trained to adjust, repair, or rebuild Briggs & Stratton engines with original parts. One more reason why Briggs & Stratton is "preferred power" by users, dealers and manufacturers of farm machinery, tools and appliances.

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WE'LL TRADE AN ACRE *of plowed ground for 2 packs of cigarettes*!*

The price of two packs of cigarettes is all it'll cost you to plow an acre with the powerful, easy-handling 1½ H. P. BREADY GARDEN TRACTOR! BREADY, with all-purpose, year 'round implements, does *all* the work on small acreage and is a *profitable auxiliary* on larger farms!

** or the price of 2 gallons of gas.*

WRITE TODAY for free folder!

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THE BREADY TRACTOR & IMPLEMENT CO.
BOX NO. 200 SOLON, OHIO.

VIRGINIA GROWERS MOURN CAMPFIELD

WILLIAM S. CAMPFIELD, secretary-treasurer of the Virginia State Horticultural Society for the past 22 years, died at his home in Augusta County, Virginia, on January 25. With his death, Virginia fruit growers have lost one of the most valuable persons ever to serve their society. With the interests of Virginia fruit growers always at heart, Campfield introduced federal and state legislation and appeared before Congress and the State Legislature to argue for orchard interests.

W. S. Campfield

Constantly advocating the offering of only the best fruit for marketing and the banning of low grades, Campfield took an active part in helping to set up the Virginia State Apple Commission by an act of the General Assembly.

Eliminating the red cedar, which helps cause cedar rust damage to apples, was another of Campfield's projects.

Campfield was a tireless and loyal member of the Virginia State Horticultural Society. During his 22 years in office, he was instrumental in increasing its membership from a few hundred to its present membership of over 1,000.

WEATHER INSTRUMENTS

(*Continued from page* 47)

This thermometer is an exceedingly practical and interesting little instrument and is used in practically all fruit growing and storage belts because a knowledge of maximum and minimum temperatures is of great importance.

There are many other instruments used in weather recording and forecasting, such as rain gauges, sunshine recorders, wind direction recorders, etc., but this article deals only with those primary instruments used by both amateur and practical observer.

In selecting weather instruments, the grower should be sure of quality. Nothing is more disheartening to an observer than an instrument's reading accepted with doubt. The extra amount spent for a quality instrument is soon forgotten and pride is developed in ownership of one which can be depended upon constantly. If a grower has good instruments and knows how to use them, he can count on being one step ahead of the weather

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TO SUPPLY HOUSES AND DEALERS IN SPRAYING EQUIPMENT

ABOUT BAR-WAY HOSE COUPLINGS

Tho over ten years' testing and field use has proved that BAR-WAY couplings meet every requirement for high pressure work, we just weren't prepared for the tremendous response to our Feb. ad. Consequently (and due to bad weather) distributors have had a hard time getting couplings to every dealer. PLEASE, if your distributor hasn't been able to contact you as yet, write us at once and we will try to facilitate your needs.

1. High Pressure
2. Streamlined
3. Will Not Fail
4. Use Over and Over Again

AND TO USERS . . .

With the spring spraying season coming along fast, we're doing everything possible to get adequate stocks of Bar-Way couplings in your dealer's hands. Bar-Ways are for ½" and ¾" hose, garden-hose thread. Couples ¾" to ½" without adaptors! Interchangeable and remountable, in a few seconds! See our ad in February issue, page 57, or write for descriptive circular. Sold only thru distributors.

BAR-WAY MFG. CO.
80 Canal Street Stamford, Conn.
WEST COAST REPRESENTATIVE
383 Brennan Street, San Francisco, Calif.

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THE BEST OF THE NEW AND OLD VARIETIES

APPLES, CHERRIES, PEACHES, PEARS, PLUMS, AND SMALL FRUITS

You can have confidence in a firm whose service to the public covers 101 consecutive years.

Spring '48 Special Peach List now available. Write for quotations.

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"Our One-Hundredth and First Year—1847-1948."

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Write us if interested in our spare time selling plan.

HONEY BEES

Fascinating - Profitable - Inexpensive

Little care required. Increases fruit. Catalog free or send **$2.50** *for 12 month subscription to our monthly magazine* **GLEANINGS IN BEE CULTURE** *and 105 page beginners' book* **STARTING RIGHT WITH BEES**

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For the FRUIT GROWER

Arsenate of Lead

Micronized* Sulfur
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(Micronized wettable powder containing 50% DDT)

3% DDT DUST
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PPG

Corona Chemical Division
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PITTSBURGH PLATE GLASS COMPANY

*Trade Mark Reg. by The Micronizer Company, Moorestown, New Jersey

NEW BULLETINS

Many publications of the state agricultural colleges and experiment stations contain information of interest to fruit growers from other states. Frequently these bulletins may be obtained by writing the Director of Publications of the college or experiment station concerned.

- **Planting an Orchard** (Bul. 266, Reprint, 1945) U. of Maine, Coll. of Agr., Orono, gives details as to location, soil type, varieties, and actual planting and management of the new orchard.

- **Small Fruit Culture** (Spec. Circ. 74, 1947) Ohio Agr. Exp. Station, Wooster, condenses information relating to berry culture, from planting to harvesting.

- **Soil Management Practices in the Orchard** (Circ. Bul. 199, 1946) Mich. State Coll. Agr. Exp. Station, East Lansing, presents a number of soil management practices for both the young and bearing orchard.

- **Control of Diseases and Insects in the Orchard** (Ext. Bul. 711, 1947) N. Y. State. Coll. of Agr., Cornell U., Ithaca, brings together in available form all the more important facts concerning spraying and dusting under New York conditions.

- **Tree Fruits for Plains and Foothill Regions** (Circ. 142-A, 1946) Ext. Service, Colo. A. & M. Coll., Fort Collins, describes varieties of various fruits for planting in this region.

- **Insect Pest Control in Young Apple Orchards** (Ext. Bul. 274, 1945) U. of Maine, Coll. of Agr., Orono, presents brief discussions of the more commonly destructive insect pests of young apple orchards in Maine.

- **Codling Moth Control** (Bul. 519, 1946) U. of Ill. Agr. Exp. Station, Urbana, is the report of a survey made to determine the various methods for good and poor control of codling moth. The results showed that the superiority of DDT as an insecticide did not make up for poor spraying and other poor practices, nor offset lack of sanitation.

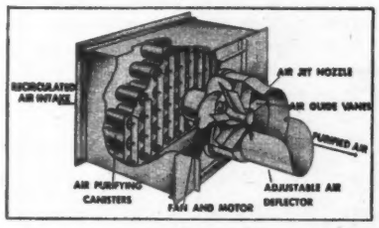
- **Avocado Situation in California 1947** (Circ. 372, 1947) Coll. of Agr., U. of Cal., Berkeley, gives production, acreage, and yield figures for avocados in California.

STORE APPLES FOUR TO SIX WEEKS LONGER

DOREX ACTIVATED CARBON APPLE STORAGE UNITS

- Extend storage life
- Reduce scald
- Protect flavor

Cornell University Agricultural Experiment Station tested Dorex activated carbon air purification equipment in the laboratory and in commercial apple storages for over three years. Results proved that fruit could be kept firm and flavorful four to six weeks longer. Dorex activated carbon units soak up the ethylene gas which quickens ripening, the gases which cause scald, and the "off" odors from packing materials and stored produce that impair taste and flavor. Another advantage is that Dorex units permit access to the storage space at all times for continual storing and removal of fruit.



Dorex self-contained units are designed to meet the requirements and specifications determined by the Cornell research. Portable and adjustable to storage conditions, they may be floor-mounted or suspended from wall or ceiling.

LOW IN COST—EASY TO INSTALL

The average initial Dorex unit cost is 6¢ per bushel (based on storage capacity). Increased profits from a longer marketing season and better quality fruit in the first year alone can often exceed the original investment. Yearly maintenance is about ½¢ per bushel.

Dorex units are shipped complete, ready to install. There are no extra parts to buy, no expensive ducts to erect. Operation is entirely automatic and independent of refrigeration equipment. Little space is needed and practically no attention required. Capacities range up to 20,000 bushels, and units, either singly or in multiple, can be adapted to any size storage or layout.

For complete information, and the name of the dealer nearest you, write, giving your storage room capacities, to:

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POWER BELT CONVEYOR FOR NEW HANDLING FLEXIBILITY

This portable unit of proved design has been re-vamped from end to end. Flexible adjustments. For instance, 11 ft. model permits 82" stacking height. Conveys on the level at heights of 18¾" to 64¾" from floor. New positive action screw and bevel gear supports make height adjustment safer, easier. Heavy-duty side channels; full length guard rails; 25% wider belts; moves from job to job on free-rolling casters. Details on request.

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MATERIAL HANDLING EQUIPMENT

Wherever you use

SPRAYS

GET THEM ON
KEEP THEM ON
with COLLOIDAL

Z-1

This spraying season, use Colloidal Z-1 spreader and depositor with your insecticides and fungicides, for more even coverage, with heavier deposits. Be sure your protectants cover thoroughly and stay on longer, in all kinds of weather! Use Colloidal Z-1!

Ask for FREE Bulletin

COLLOIDAL PRODUCTS CORPORATION
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SINCE 1920

BLUEBERRY CULTURE IS PROFITABLE

By JAMES SHOEMAKER

LAND SUITABLE for blueberry culture is plentiful in New Jersey since the blueberry prefers a moist area with a peat covering and a sand subsoil to such a depth that deep plowing will turn up some of the sand. I estimate that there are at the minimum 100,000 acres of such land in New Jersey.

The land is not high-priced, but as a rule it has to be bought in large quantities so that the average cost for each acre used might be as high as fifty dollars. The cost of cleaning and fitting the land is somewhat higher; I have found that a reasonable cost for establishing an acre of blueberries is as follows: Cost of land, $50; cleaning and preparing land, $150; 1500 plants at present price, $750. During 1947 the average price for cultivated blueberries at the shipping point was $2.50 to $3.00 a 12-pint slat. Of this, between $250 and $300 goes for harvesting expenses, including picking, packing, and trucking. The acre cost for cultivating the first year is $25; pruning after the fourth year is $15, and fertilizer and incidental expenses $10. Experience on ten acres of partly grown plants shows that the crops of the third, fourth and fifth seasons will pay the carrying charges on the property for the five years and possibly leave some profit. An actual yield of 3000 pint boxes per acre on a three-year-old, two-acre plantation has been secured. The sixth year and thereafter, as the plantation is in full bearing, the yield should approximate 5000 to 6000 pint boxes to the acre, annually. The return per acre at that time should be not less than $650 after deducting $250 for harvesting and $50 for general expenses.

It appears to me that the culture of blueberries is a profitable branch of agriculture. However, these figures are given on a property where blueberry culture is a side line, with cranberries as the main crop. Thus no charge is made for housing the pickers. Only actual money spent in the blueberry work is recognized. In addition account should be taken of the loss due to late frost. The plants have been raised in my propagation beds and have been selected for frost resistance, but in spite of this, there will be some damage from this source in May when the water is taken off the cranberry bog. However, all my old cranberry bogs will be planted to blueberries as the years go by because blueberry culture is really profitable in the long run.

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Buy the Clinton—Use the Clinton—Demand the Clinton—for dependable, compact, air-cooled power

2 POWER RANGES
1½ to 2 H.P.
2½ to 3 H.P.

Throughout the entire world—in every country—the Clinton is the PREFERRED GASOLINE ENGINE for dependable air-cooled power on farm equipment.

In a little over 2 years there are hundreds of thousands of Clintons in the field outperforming, outworking, doing a better job than other engines in the same H.P. range—it's the Clinton for carefree—trouble free air-cooled power.

The World's Largest Exclusive Manufacturers of 1½ to 3 H.P. Gasoline Engines.

For Complete Information See Your Local Dealer or Write Dept. 101-A

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UNITED'S B. B. (BLOCK BAKED) CORKBOARD INSULATION
PATENTED

Assures maximum insulation efficiency at minimum cost. Moisture-resistant, compact, light weight, sanitary, structurally strong, flexible.

Write for particulars

Literature on request

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Try a Brooks Patented Air Cushion appliance. This marvelous invention for most forms of reducible rupture is GUARANTEED to bring YOU heavenly comfort and security—day and night—at work and at play—or it costs you NOTHING! Thousands happy. Light, neat-fitting. No hard pads or springs. For men, women, and children. Durable, cheap. Sent on trial to prove it. Not sold in stores. Beware of imitations. Write for Free Book on Rupture, no-risk trial order plan, and Proof of Results. Ready for you NOW!

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HUNT'S GRAFTING WAXES, RODENT REPELLENT, ETC.
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GARDEN TRACTORS
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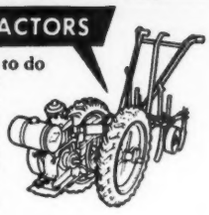
Everything it takes to do close, accurate work with minimum effort . . . matched implements for jobs the year 'round. Two models . . . for home and truck gardener.



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- Cultivator
- Moldboard Plow
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- Seeder
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- Reel Type Mower
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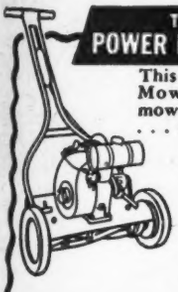
THE NEW
POWER LAWN MOWER



This new Cunningham Mower makes lawn mowing faster, easier . . . convenient clutch and throttle controls . . . big 1½ HP Cunningham engine . . . semi-pneumatic tires. You will like the speed and efficiency with which it works, and its ease of operation.

SICKLE BAR MOWER

Free wheeling . . . rubber tires . . . convenient controls . . . easy to operate . . . does hundreds of jobs . . ideal for custom work. Reel Type Mower and Spray Rig Attachments. Also available with steel wheels.

PORTABLE ENGINE

Provides the power for Cunningham Mowers and Garden Tractors, and for many other power jobs . . . 1½ HP . . . precision construction . . . you can change it from garden tractors to mowers to many other power jobs quickly and easily by simply loosening four bolts.

Write Dept. 30 for big FREE Illustrated Catalog

JAMES CUNNINGHAM, SON & CO.

Rochester 8, New York

STATE NEWS

(*Continued from page 28*)

tically no periods of mild weather, most fruit plants will have been conditioned to low temperatures so they should come through the winter in better shape than in seasons of great fluctuations in temperature. Strawberries will probably be the least affected by the sub-zero temperatures as they have been under a heavy blanket of snow this winter.—*W. D. Weeks, Univ. of Mass., Amherst.*

OHIO, *Feb. 13*—Up to this day we have had 15 days with a below zero record this winter. Temperatures in other areas have not always followed these recorded here. It is likely true that most sections of Ohio have had 12 or more days with a minus record; 22 to 25 degrees below zero have been reported from a good many areas.

Such low temperatures can be expected to do an appreciable amount of harm to the flower buds of peaches, sweet cherries, and plums. However, one of the noteworthy things about the cold this winter has been the variation in these minimum temperatures even in the same county or township for that matter.

The trees, for the most part, went into winter in good condition and until mid-January we had no extremely cold weather. Shortage of nitrogen fertilizers is turning Ohio fruit growers toward the use of mixed fertilizers. This could be a blessing in disguise for certain orchards where the long continued exclusive use of nitrogen may have made some trees over vegetative.—*C. W. Ellenwood, Sec'y, Ohio State Hort. Soc., Wooster.*

WISCONSIN, *Feb. 20*—Orchard cultivation is on the way out. Some of our leading cherry and apple growers in the Door County area are changing over to sod with nitrogen fertilizer. Writes S. S. Telfer, Ellison Bay, "We have not cultivated our orchard, either cherry or apple, for some time. This means a saving in labor, fuel for tractors and machinery. Sod orchards, we think, are practical and our crops have been satisfactory."

There is some indication of bud injury on fruit trees due to the sudden cold spell last November when the temperature went to -20° F. How serious this will be we do not yet know.—*H. J. Rahmlow, Sec'y, Wisconsin State Hort. Soc., Madison.*

NEW JERSEY LEADERS

N. J. Dept. of Agriculture

Two new horticultural leaders in New Jersey are (left) Raymond T. Anderson, Bridgeboro, N. J., recently elected president of the New Jersey State Horticultural Society, and (right) Dr. Norman F. Childers, who on January 1 became chairman of the Department of Horticulture at the New Jersey Agricultural Experiment Station, succeeding the late Prof. M. A. Blake.

FREE!

Sunoco's compact booklet of spray schedules for apples, cherries, peaches, pears, plums, prunes, grapes

Sunoco's 20-page illustrated booklet of spray schedules for fruits is a handy reference that has been used by leading fruitgrowers for years. It shows the types of spray to use on each fruit to control various pests, and when to use them.

Sunoco Emulsifying Spray Oil is an outstanding dormant and delayed-dormant spray that has been in use for well over 25 years. It helps to control aphids, codling moths, bud moths, and leaf roller, as well as insects such as San Jose scale and oyster-shell scale. By controlling pests with an oil spray in winter and early spring, you reduce the number of pests you have to contend with later.

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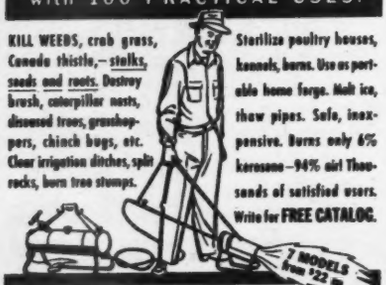

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Advertisement

From where I sit ... *by* Joe Marsh

Who Are We, Anyway?

The subject came up at Bill Webster's, the other day, as we were sitting and chatting over beer and pretzels. Just who *are* the folks who make up our town? Where'd they come from?

Doc Hollister's Scotch-English ancestry; Will Dudley's folks were Pennsylvania mining stock; Skip Powell's family were brewers back in Holland.

Guess our bloodstream's got a bit of every country on the globe—and every section of America. We still got differences in taste and background—whether they apply to music, history, or beer. Only those differences don't matter—because we're self-respecting people, in a free, united land.

And from where I sit, that's what makes our towns and cities—our America—so strong and tolerant. Our championship of individual liberties has brought us people from all faiths, all lands—to prove that respect for one another's rights is the greatest bond humanity can know!

Joe Marsh

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NEW FUNGICIDE AND INSECTICIDE

A NEW FUNGICIDE and insecticide developed by the Dow Chemical Co. is now ready for commercial use under the name of DN-289. This chemical, the triethanolamine salt of dinitro-sec-butylphenol, is effective against a wide range of fruit pests and diseases according to the manufacturer. It is a stable, clear solution which is easily miscible with water.

The tip of a sweet cherry branch distorted by black cherry aphid.

DN-289 has been found to be effective during the dormant season against various aphids, the eye-spotted bud moth, the cherry case-bearer, the pear psylla and oyster shell scale on apples. Some promising results have also been produced in the control of San Jose scale, scurfy scale and the eggs of the European red mite. Sooty blotch on pears, a fungus growth, has also been controlled successfully by DN-289.

BOOK REVIEWS

● **Hormones and Horticulture** ($4.50), McGraw-Hill Book Co., by George S. Avery, Jr. and Elizabeth Bindloss Johnson gathers together the widely scattered and often theoretical information on the use of special chemicals in the regulation of plant growth and indicates trends in the field. It presents specific directions for applying such chemicals and evaluates their usefulness in horticultural practice.

● **Growth Regulators** ($2.50), The University of Chicago Press, is a handbook based on experiments conducted by the USDA (on the staff of which are the authors of this book, John W. Mitchell and Paul C. Marth), state experiment stations, and many other research agencies. The book describes the use of a growth regulator to kill lawn weeds, prevent fruit drop, hasten fruit ripening, etc.

Orders for these books may be sent to AMERICAN FRUIT GROWER, *1370 Ontario Street, Cleveland, Ohio, with check or money order enclosed.*

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NEW PROCESSING INDUSTRY IN WEST

One of the nation's newest canned and frozen food producing and processing areas stretches from southwestern Idaho across the northeast corner of Oregon to Yakima in south central Washington. The development of the area was not an accident; it came as the result of outside and internal influences and close grower-processor-railroad cooperation.

The war became the first outside cause, with such a heavy demand for foodstuffs on the United States that every possible rural acre was cultivated for agricultural production. Secondly, there was the ever-growing popularity of frozen foods which have become a part of the merchandise in almost every super market and corner grocery in the country. The internal influence was the suitability of this area to the production of certain fruits and row crops.

Final inspection before shipment

Cooperation between growers, processors and railroads was a natural outgrowth of the war demand, for as new markets opened up, more acreage was devoted to products which were adaptable for canning and freezing. The growers were spared the necessity of shipping their raw products long distances when the processors moved into the area providing a market for the growers' production. Numerous plants were constructed and others are under construction or proposed for future expansion.

To keep pace with this growth the Union Pacific Railroad is adding new box cars and refrigerator cars to speed up movement of the processed foods. Long a part of the area's economy, the railroad has thousands of miles of track connecting the Pacific Northwest with the East and South. It has an agricultural development department, designed to serve the farming districts along its way, which is now promoting the planting of price-firm crops to replace those likely to suffer a market drop. Their objective is to maintain a large and continuing market for the Belt's full production by preservation through canning and freezing.

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For GARDEN ORCHARD and FARM

Right for all kinds of spraying—DDT to destroy bacteria, insects, bugs; chemicals for weed control; whitewash and cold water paint; sprays livestock, barns, lawns; fights fires. The Armstrong has enough force to reach the tallest fruit tree. Compact—nothing to get out of order—always ready for action. Brass nozzle and pump, 5-gallon galvanized iron knapsack. $13.50 at stores or sent C.O.D. Higher west of Rockies and Canada. Circular free. **Armstrong Products Corp., Dept. AG, Huntington 12, W. Va.**

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Every orchardist will welcome the Danuser Digger attachment for popular makes of tractors. Here is the modern way to dig holes: for seedling setting, for tree feeding, and fence posts. Augers from 4" to 18". Write for details, Dept. H.

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BLUEBERRIES
Large as Cherries

Plant Keith's "Bearing-age" Bushes. Bear during summer year after year. Grown in garden or lawn as easily as shrubs. We tell you how in Keith's FREE Berry Book. Also lists Boysenberries, Grapes, Strawberries, Raspberries. Special Blueberry OFFERS.

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QUEENS OF THE FLOWER WORLD!

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CITRUS ACREAGE

ACREAGE OF citrus trees of bearing age in the United States has risen from 282,100 acres in 1919 to a total of 848,000 acres in 1947, according to the United States Department of Agriculture. Orange trees, including tangerines, make up about 68 percent.

Most of the nation's navel oranges and lemons are grown in California. Nearly all commercial tangerines and lime plantings are in Florida. Valencia oranges are important in all citrus areas. Of the nation's total grapefruit acreage, Florida has 46 percent and Texas 40 percent.

Prior to the 1930's citrus fruits were crops of minor commercial importance outside of California and Florida. In 1919 Texas and Arizona each had less than 1,000 acres of bearing-age citrus trees. In 1930 Texas citrus trees in bearing had spread to about 23,000 acres and Arizona to about 4,000 acres. Texas now has about 113,000 acres and Arizona about 20,000 acres of bearing-age trees.

SHE CAN BAKE A CHERRY PIE

Mrs. Willis Burkholder, 37-year-old wife of a Traverse City, Michigan, cherry grower and hatchery operator, turns the fruit of their orchards each season into pies, jam and jelly which she sells to tourists from all over the nation.

Mrs. Burkholder is pictured baking her 1,000th cherry pie; she bakes from 20 to 50 pies every day during the season, according to the demand. Every other day during the season she makes jelly or jam. Near the end of the 1947 season she had made and sold over 2,000 glasses. For ten years she has been spreading the fame of Traverse City cherries through her pies and jellies.

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AMERICAN BEE JOURNAL, Box 64, Hamilton, Ill.

SPRING WEATHER

(*Continued from page* 38)

during the ensuing critical growing period.

It can be stated that there will be a continued deficiency in moisture in the vast agricultural areas of California and over the storage basins from which water is drawn for irrigation. The midwest and eastern sections of the country will experience relatively mild conditions during late February and early March only to be blasted by severe cold again during the middle weeks of March with killing frosts extending far to the south over most of the country. It is unlikely, however, that Florida and southern Texas will be affected appreciably by this cold wave. Parts of southern Arizona and the Imperial Valley may experience further damage. The lines drawn on Chart III give an estimate of the southernmost limit of killing frosts this spring and the approximate periods during which they are likely to occur.

In contrast to last year, which was almost continually cold and wet in the eastern United States, there will be early signs of spring this year with frequent periods of warm weather during late March and early April. However, the weather changes in these areas will be more extreme this year. Following the violent and frequent extremes in the weather of March and April, May will exhibit more tranquillity and, in general, favorable weather conditions for horticultural operations. The spring rains will spread northward earlier this year than last year, and by May relatively dry weather conditions will result except in the states bordering the Great Lakes, in New England, and along the Gulf Coast. Average temperatures in May are expected to rise above normal throughout most of the eastern United States.

In the Pacific Northwest there is a threat of late spring rains which may be harmful at certain stages in the development of the crops and may interfere with spraying and other pest control operations in the apple and cherry orchards. There is also a threat of late frosts in these areas, particularly east of the Cascade mountains.

It has been possible to touch only the broadest aspects of the situation for this spring in this discussion. Each fruit growing area and every grower is confronted with special problems as the season advances. It is, therefore, essential to keep abreast of current weather developments as they affect the progress of the crop by consulting the various government and private sources of meteorological information.

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$2.50 to $15 each—as to Age

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My years of production and distribution experiences assures stock of proven quality. Selling direct to planter, I help you save. Order Now with confidence.

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NEW AND USED SPRAYERS, DUSTERS. TWO Speed Sprayers. Bushel Crates. Orchard Supplies. CORY ORCHARDS SUPPLY COMPANY, Cory and Indianapolis, Indiana.

THE LARGEST HARDIE TRACTOR-TYPE TRAILER sprayer. 500 gallon capacity. Mounted on rubber. Never been used as it is too large for my Ford-Ferguson tractor. Equipped for orchard and row crops. Bargain. RAYMOND POLLITT, Bolton, North Carolina.

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RELIABLE MAN WITH CAR WANTED TO CALL ON farmers. Wonderful opportunity now. $15-$20 in a day. No experience or capital required. Permanent. Write today. McNESS CO., Dept. 68, Freeport, Illinois.

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GUARANTEED ROLLIT, EVER READY BALL PEN. Never stops writing, standard make, nationally advertised, convertible writes dry, blue, red, green ink. Pen of tomorrow. $1.00 prepaid or will send C.O.D. plus postage. Order today. Written 5-year guarantee. We repair all makes of fountain pens. HIGHTOWER PRODUCTS, East Point, Georgia.

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100,000 LATHAM RASPBERRY PLANTS. No. 1 SUCKers @ $30.00 per thousand. C. H. BENEDICT, Route 1, Grand Junction, Michigan.

HYBRED RASPBERRY "POTOMAC" "RUBUS NEGLECTUS" Red x Black by USDA. Very productive and free of disease, large purple fruit of finest quality, upright hardy canes, thornless. Doubly Inspected plants for April, $3.00 per 25. $6.00 per 50 prepaid. W. A. BENTS NURSERIES, Small Fruit Specialists, Cresco, Iowa.

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PEACH TREES AS LOW AS 10c. APPLES, PLUMS, Pears, Cherries, Figs, Apricots, Paper Shell Pecans, Shade Trees, Grapes, Berry Plants, Rose Bushes and Flowering Shrubs at lowest prices. A general line of first class Nursery Stock. Satisfaction Guaranteed. Catalogue free. EAST'S NURSERY, Amity, Arkansas.

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STRAWBERRY PLANTS. AROMA, BLAKEMORE, Dunlaps, 1000 Express Collect $5.00. 500 postpaid $3.75. 100, $1.00. WARREN H. LACKEY, Harrison, Tennessee.

For the last time—no! You can't keep them tires in our vault even if farmers did vote 2 to 1 for the B. F. Goodrich kinda tread!

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An advertisement of The B. F. Goodrich Company, Akron, Ohio

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STRAWBERRY PLANTS 100 BLAKEMORE, KLONdike or Missionary $1.00 Postpaid; 100 Mastodon or Gem Everbearing $2.50; 100 Streamliner the most promising everbearing $5.00. Ask for list describing all leading varieties as well as vine berry plants. WALLER BROTHERS, Judsonia, Arkansas.

FRUIT TREES, NUT TREES, BERRY PLANTS AND Ornamental Plant Material—offered by Virginia's largest Growers. Write for Free Copy 48-page Planting Guide in color. WAYNESBORO NURSERIES, Waynesboro, Va.

BEST VARIETIES. BIG DISCOUNTS ON EARLY ORders. Strawberries. Boysenberries. Blueberries. Blackberries. Raspberries. Grapes. Fruit Trees. Bush Cherries. Asparagus. Rhubarb. Shade Trees. Shrubs. Hedge. Roses. Evergreens. Perennials. Glads. Dahlias. CATALOG FREE. ZILKE NURSERIES, Baroda, Michigan.

ORCHARDS FOR SALE

FOR SALE: 80 ACRE FARM, 52 bearing apple orchard, on hard road, excellent orchard trade. Buildings in good condition. Address DALE BAKER, Route 2, Marion, Illinois.

FOR SALE: THE H. E. COOK FRUIT FARM, 1 MI. west of Morral, Marion County, Ohio, consisting of 132 acres of farm land, pasture, small amount of timber, and apple orchard, 6-room modern house, very nice new apple storage with cider mill and equipment to operate orchard, sprayer outfit, etc. MRS. MARY COOK, adm. Estate of Harley E. Cook, Morral, Ohio.

MIAMI VALLEY ORCHARDS FOR SALE, NEAR Miamitown, Ohio. Consisting of 105 acres, 60 apples, 5 peaches, 12 acres river bottom land, and thirty acres of good pasture with never failing springs, two large ponds. New six room modern house, new garage, good large storage and packing house and other buildings. Located on good road. ALBERT DONOWORTH AND SONS, Realtors, Harrison, Ohio.

FOR SALE: 300 ACRES INCLUDING SEVENTY-FIVE acre full bearing apple orchard in Beaver County, Pa. AMERICAN FRUIT GROWER, Box 77, 1370 Ontario Street, Cleveland 13, Ohio.

FOR SALE—NEW ENGLAND APPLE ORCHARD. 400 acres splendid condition. Large quality crops. Nearby markets. Large cold storage plant—Buildings and equipment alone worth more than asking price of $165,000. Write AMERICAN FRUIT GROWER, Box 76, 1370 Ontario Street, Cleveland, Ohio.

88 ACRE FRUIT FARM, 46 APPLES, 4 GRAPES, 35 pasture woodland. 7000 bushel storage, packinghouse, barn, new 400 gal. sprayer, duster, 2 tractors, grader, 6,000 crates and boxes. Cottage and 3 acre garden. Market Cleveland and nearby towns. Located Florence, Ohio. Farm $18,000, equipment $4,000. Address ENGLISH ORCHARDS, Wakeman, Ohio.

CHARLOTTE, NORTH CAROLINA. FANCY FRUIT Farm, 137 acres, established market. 3,000 apple, peach, plum, 9 years old. Buildings, tractors, machinery, horse. $4,000 cash, $2,000 yearly eight years to experienced orchardist. ALBERT ESCOTT, Realtor, Charlotte, N.C.

BLUEBERRY PLANTATION. THIRTY-EIGHT ACRES, thirty planted to best Hybred varieties. Just beginning to bear. Located at Grand Junction, Michigan. JONES BROTHERS, Route 1, Dowagiac, Michigan.

FOR SALE: ONE OF THE BEST ORCHARDS IN Michigan, 75 acres Apples, 12 acres Cherries, 5 acres Peaches. Excellent home. Foreman's residence. Cold storage. Full equipment. Yield $20,000.00 to $40,000.00 annually. Write CHAS. L. KREBS, Broker, Albion, Michigan, for particulars.

60 ACRE FARM ON PAVED HIGHWAY. HOWELL CO., Missouri. Electricity. Good water supply. Four room house. 12 acres peaches, 3-12 years old. About half bearing. Other fruit. $4800. Write: BOB McGRATH, 24 Paris Court, Columbia, Missouri

80 ACRE APPLE ORCHARD. 35 YEAR OLD PRIME trees. All equipment included. Whole or half interest. NILES-FLEMING, Pollasky Block, Alma, Michigan.

32-ACRE APPLE ORCHARD WITH COMPLETE OPerating equipment. Fronts on highly traveled Route 5, between Kent and Ravenna, Ohio. Large storage and packing buildings. C. F. RUMOLD, 320 South Lincoln Avenue, Kent, Ohio.

FOR SALE—PROFITABLE ORANGE GROVE. ON account of health of owner will sell my productive grove in Orange County, Florida, of sixty acres, yielding approximately 20,000 boxes annually. Income yield 10% to 12% net average last 12 years. Price $1,000.00 per acre, which is 20% below market value. Terms to reliable party. ADDRESS AMERICAN FRUIT GROWER, BOX 72, 1370 Ontario St., Cleveland 13, Ohio.

137 ACRE FARM OF WHICH 61 ACRES ARE BEARING apple trees. Some cherries. Most productive orchard in Oneida County, New York. Prospects this year are for largest crop. All equipment. Modern 8 room house and bath. Tenant house, shop. Common storages for 10,000 bushels. SUNNYBROOK ORCHARDS, Deansboro, N.Y.

125 ACRES OF GOOD LAND CONTAINING 68 ACRES good apple-bearing orchard in excellent growing section in Western Illinois. Well built six room house, electricity, good water, price $10,000. This includes around $2000 worth personal property, horses, spray rigs, tools, farm machinery, etc. Very big bargain for some one. Must sell. Terms if desired. Address AMERICAN FRUIT GROWER, Box 78, 1370 Ontario Street, Cleveland 13, Ohio.

FOR SALE: APPLE ORCHARD, 26 ACRES INTACT. E. M. WICKIM, Route 1, Wakeman, Ohio.

APPLE ORCHARD—50 ACRES, 20 IN APPLES, RED Delicious, Jonathan, Spys, Prime bearing condition. 3 acres asparagus bearing heavily. Balance Alfalfa meadow. New 6000 bushel storage building. Modern Residence. Equipment. Retiring. Priced sell quickly. R. A. WINSLOW, Route 8, Kalamazoo, Michigan.

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WHITE GUINEAS—CHICKS, EGGS, STOCK. CATAlogue Free. GOSHEN POULTRY FARM, Goshen, Ind.

PEAFOWL. PHEASANTS, BANTAMS, GUINEAS Waterfowl. Thirty Varieties Pigeons, Stock, Eggs. JOHN HASS, Bettendorf, Iowa.

HELM'S PULLORUM PASSED CHICKS. HOLDER Three World Records. ROP Sired Matings, Sexed Chicks. Free Brooding Bulletins. ILLINOIS HATCHERY, Metropolis, Illinois.

RAISE TURKEYS THE NEW WAY. WRITE FOR free information explaining how to make up to $3,000.00 in your own backyard. Address NATIONAL TURKEY INSTITUTE, Dept. 233, Columbus, Kansas.

RAISE POULTRY FOR PROFIT! LEARN HOW others succeed. Read America's leading Poultry magazine. 24 months only $1.00. Subscribe Today! POULTRY TRIBUNE, Dept. H, Mount Morris, Illinois.

SCHLICHTMAN'S U.S. APPROVED PULLORUM CONtrolled chicks, per 100 prepaid, Leghorns, Rocks, Reds, Wyandottes, Austra Whites, $10.90. Assorted $8.95. Pedigree sired and sexed chicks. Free Catalog explaining 2-week replacement guarantee. SCHLICHTMAN HATCHERY, Appleton City, Missouri.

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HEAVYWEIGHT USED ARMY RAINCOATS—PRACtically new. Guaranteed perfect condition. Large, medium, small, $2.75. Pay when received. BUFORD BUTTS, Sharon, Tennessee.

TREE BANDS

YOU WILL SAVE MONEY AND SAVE YOUR APPLES if you continue to use chemically treated bands on your apple trees to control codling moth—satisfaction guaranteed. Write for prices and circulars to EDWIN H. HOUSE, Michigan Fruit Belt, Saugatuck, Michigan.

FOR BETA-NAPHTHOL TREATED APPLE TREE bands. Write M. A. KOELLER, Barry, Illinois.

VEGETABLE PLANTS FOR SALE

HORSERADISH SETS ALL LENGTHS. RALPH MAYHEW, Sioux City, Iowa.

FREE 1948 GARDEN BOOK—HAVE MORE VEGEtables earlier by setting Piedmont field-grown Cabbage, Onion, Lettuce, Broccoli, Cauliflower, Beet, Tomato, Potato, Eggplant, Pepper Plants. Same low prices. Safe Delivery Guaranteed. Write today. PIEDMONT PLANT COMPANY, Box 917, Albany, Georgia.

WANTED TO BUY

WANTED UNIMPROVED FARM. RATHER CHEAP. HERBERT AYER, Route 1, Newtown, Ohio.

WANTED: SMALL PEACH AND APPLE GRADER. GLENN ERNST, Farina, Illinois.

USED APPLE GRADER AND POLISHER—MEDIUM or small size in good condition. J. M. SCOTT, 11295 McKinley Road, Montrose, Michigan.

THE NEW SUPERFINE NICHOLS TRIANGLE BRAND TRADE MARK REG. U.S. PAT. OFF. 99% + PURE COPPER SULPHATE

Makes Bordeaux the Quick, Efficient Way!

Superfine is made by an entirely new process of vacuum crystalization which assures high *purity* and *uniformity*. A *premium* product at *no extra cost* to you!

NEW, QUICK WAY TO MAKE BORDEAUX

Superfine crystals are about the size of coarse table salt. Pour them into a container and play the hose on them. They dissolve before the container is filled! *It's the easy and efficient way to make Bordeaux!*

● **FREE!** SEND POSTCARD TODAY FOR VALUABLE FREE BOOKLET—"Bordeaux Mixture—Its Efficient Preparation and Use."

Your dealer can also supply TRIANGLE BRAND Copper Sulphate in LARGE CRYSTALS, SMALL CRYSTALS, GRANULATED, "INSTANT" (powder) for regular Bordeaux mixture. Also MONOHYDRATED for Copper-Lime dusts.

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Ramblings OF A HORTICULTURIST

New England

NEW ENGLAND is the quiet setting in which American Democracy was born, and the gentle ruggedness of her countryside inspires every traveller. The romance and adventure of her history is whispered by the wind, among the trees on every hill top, and in every peaceful valley.

New England is rich in history; she is also rich in horticulture. Although not producing fruit in such enormous volume as some of her neighboring areas, New England does produce larger quantities of different fruits than the casual visitor would suppose, and the quality of her fruit is superb. The McIntosh apple can hardly be excelled, and it is good to see it making such progress in the stronghold of the once-famed New England Baldwin.

Blueberries of the low-bush type are grown from Maine to Connecticut, and each state has developed the industry to some extent, the development reaching greatest proportions in Maine, New Hampshire and Massachusetts. I first tasted this delicious fruit while loitering along the paths about Walden Pond near Concord, Mass., the pond made famous a century ago by the naturalist-philosopher, Henry David Thoreau.

Concord, once the home of celebrated literary geniuses and the site of many events in American history, also holds a distinguished place in the annals of horticulture. It was here that Ephraim Wales Bull lived and in 1849, produced the Concord grape. His house, now the private home of Mr. and Mrs. William R. Callahan, stands just east of Nathaniel Hawthorne's famous old "Wayside Inn" on Lexington Rd., and is only a few minutes' walk from the big white Emerson house.

Mr. Bull was an elegant dresser, and it is told that Emerson once mistook him for A. B. Alcott, but his son informed him that it was Bull. Emerson said upon being corrected, "Oh, well, Bull. That is quite a different matter. I thought Alcott looked more like a gentleman and less like a philosopher than usual."

A fine pear tree at the Conyers Farm

There are many kind, generous and gracious folk in New England, and at Storrs, Conn., the University of Connecticut's amiable Prof. H. A. Rollins, together with his staff of horticulturists, gave this rambler a most pleasant reception.

The Conyers Farm, near Greenwich, Conn., which consists of 400 acres of apples, pears and peaches, is one of the largest and most productive orchards of the state. Its proprietor, C. H. Gowdy, and I were deeply engaged in horticultural talk as we bounced around through the orchard, hoping the old car would hold together. He told me, then, something of his fruit growing operations. I should say the key-note of his whole program is efficiency, one of the most important characteristics of good business, yet one which is most difficult to achieve.

By rotation, Gowdy is keeping his fruit-producing acreage nearly constant, young and productive. Each year, on the Conyers Farm, a block or two of old trees is pulled out and young ones set. This is one of the important steps towards maintaining efficient and profitable production.

Yes, historic old New England is keeping apace with the latest, and most efficient, orchard methods. She is building on the foundations of a rich and romantic past, a rich and brilliant future.—*E. S. B.*

Willys-Overland Announces

A NEW HYDRAULIC-CONTROL LIFT

To Use With 3-Point-Hitch Implements

FOR FARMING WITH THE UNIVERSAL 'JEEP'

This new hydraulic lift and the 4-wheel-drive Universal "Jeep" offer you the advantages of hydraulic control plus the wide speed range and all-around utility of the "Jeep".

You raise or lower implements by merely moving the touch-control lever beside driver's seat.

You control working-depth and tilt or level implement without leaving your seat.

You can attach an implement in one minute or less by inserting the three link pins.

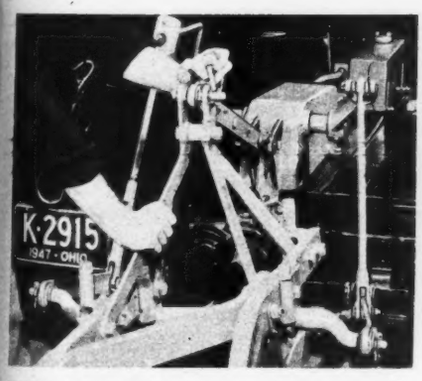
This double-acting hydraulic lift provides either up or down pressure on the implement to assure maximum efficiency.

Only the "Jeep" gives you normal truck speeds for saving time transporting implements.

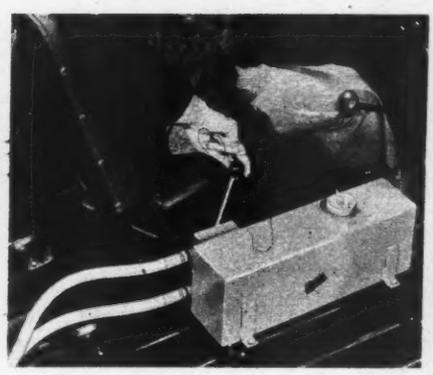
The 60-lb. lift is easily removed by one man, leaving the Universal "Jeep" free for year-'round use in hauling and towing on or off the road. You can use your "Jeep" for belt work with power-take-off with lift on or off. The new lift can be installed on any Universal "Jeep".

See your Willys-Overland dealer now about this great modern achievement for mechanized farming.

The 4-Wheel-Drive UNIVERSAL 'Jeep'



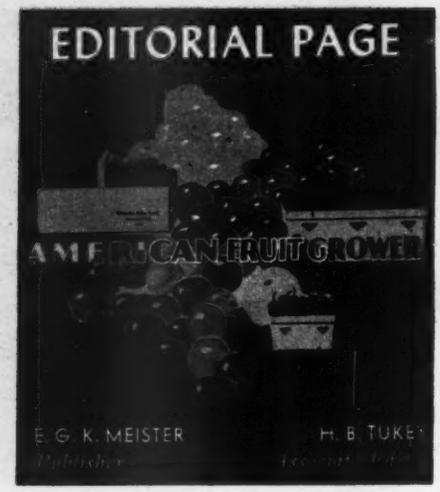
IN ONE MINUTE you can attach or unhitch implements through simple three-point linkage. Lift can be removed from "Jeep" bed by unscrewing three cap screws.



A LIGHT TOUCH on the hydraulic-control lever lifts, lowers or adjusts implement —you never leave the cushioned, full-back driver's seat of the Universal "Jeep".

THE UNIVERSAL 'JEEP' serves as a 4-wheel-drive tractor with hydraulic-lift implements and as a general utility vehicle for scores of farm jobs all year long.

WILLYS-OVERLAND MOTORS, TOLEDO, OHIO, MAKERS OF AMERICA'S MOST USEFUL VEHICLES



The Weather Season

SPRINGTIME traditionally turns many an anxious eye to the sky for portents of the weather. Because orchards are most susceptible to the vagaries of the skies at bloom, spring is often aptly called the Weather Season. Spring weather can be the fruit grower's best friend or worst enemy.

Although many will scoff at the idea of doing something about spring weather, nevertheless plenty is being done today. How to make rain, utilizing long range weather forecasts, learning how to understand your orchard weather and how to use the radio in combating spring weather are all tried and true methods.

Mark Twain may not have realized it at the time but he was all wet when he said "Everybody talks about the weather but nobody does anything about it."

Mr. John Public and the Grower

AT THE Hartford meeting of the Connecticut Pomological Society, Secretary H. C. C. Miles uttered a plea for fruit growers to inform the consuming public about the tremendous costs and hazards of food production. Secretary Miles was, no doubt, thinking of the critics of food costs and the feeling that growers were making large profits at the expense of the food buying public.

Because the average food buying citizen has little conception of the costs and risks involved in farming, an educational campaign, as Secretary Miles suggests, would be a valuable aid in bettering relations between city and farm. At the same time, it should be brought to light that, although everyone is aware of the high cost of living, the increased cost of food has lagged behind increases in income. The share of income required to purchase the same amount and type of foods dropped 30% from the average of years 1935-39 to early 1946. This is equivalent to a 30% decline in food prices relative to income. In 1919, 33% of total income was the cost to the consumer for food and in the second quarter of 1947 it was 24%. Or, to put it another way, the consumer is spending a smaller proportion of his income for food.

Because the city citizen is the valued customer of the grower, any program which creates a better understanding between the two is to the grower's advantage. Also with an election year at hand and considerable political boon-doggling confusing many issues, it is important that the grower make sure that the public is correctly informed. A good job of public relations on a local, state and national basis now will pay future dividends.

Don't Neglect Your Fertilizer Program

THE FAMILIAR advice "Order early" applies again this year to the procurement of fertilizers, particularly nitrogen. Compared with last year there will be more fertilizer, but supplies will still be short.

Faced with increasing costs, every grower will probably think twice before making substantial expenditures. In this connection, however, it is wise to note that higher fruit production per acre means lower unit costs, and a continuing fertilizer program plays an important part in increasing yields. Also, plant food prices still lag considerably behind increases in the average cost of other farm supplies, and fertilizers are a good "buy" today.

Fruit Production at a Glance

	1936-45	1946	1947
Apples bushels	112,896,000	119,410,000	112,503,000
Peaches bushels	62,936,000	86,643,000	82,981,000
Pears bushels	29,510,000	34,447,000	35,350,000
Grapes tons	2,578,920	3,119,500	3,093,800
Plums and Prunes tons (fresh)	707,660	791,000	672,300
Cherries tons	159,157	229,620	180,830

CITRUS

	1936-45	1946-47	Feb. 1, Est. 1947-48
Oranges boxes	83,488,000	113,980,000	108,560,000
Grapefruit	44,593,000	59,640,000	62,050,000

WHAT IS "MARKETING"

"MARKETING" is the magic word these days. With the passage of the Hope-Flannagan Act and its emphasis on research in marketing, the discussion everywhere sooner or later comes to marketing. The idea in many quarters seems to be that all we need do is carry on some research in marketing and many of our problems will end. But, unfortunately, it is not going to be quite so easy.

In the first place, what do we mean by the word "marketing"? The other day, a group of leaders in the fruit industry met to discuss problems. They were asked, "What do you mean by marketing, and what is the most important problem in that field?" One was insistent that the major problem was *pricing*.

"Find some machinery," said one, "for rapid setting of prices that are fair to both the buyer and the seller, and stuff will move."

"No," said another, "the big problem is consumer demand. Find what the consumer wants and then give it to him."

"No," said a third, "produce good stuff and both price and consumer demand will take care of themselves." And so it went; all of which brings out the point that what most of us know about marketing and what we understand by the term is not much. We are all talking different languages.

Now, when it comes to problems of production, we have no trouble. But notice that we do not hold meetings on the broad plain of "production," as we do on "marketing." No, we break the problems of production down into such detailed subdivisions as pruning sour cherries, fertilizers for strawberries, blossom sprays for thinning Wealthy apples, and DDT for codling moth control. We would not think of gathering in a large group and discussing everything at once from carrots to peaches. Yet, that is what we too often do when we talk of marketing.

In short, it is time to get down to specific cases and find out what needs to be studied in marketing research. "Consumer reaction" is not enough. "Quality" is not enough. We need to separate brown rot of peaches in transit from pre-packaging of strawberries and from merchandising of apples in Chicago or in Atlanta. Admittedly, some folks have already been doing this, but to the rank and file the waters are unknown and uncharted.

We cannot begin too soon to think this way and to get this problem of "Marketing" analyzed and something under way. We are wasting valuable time.

A small tractor-but *Good!*

Is your farm of a size that calls for a one to two-plow tractor? Or do you use the smaller tractor as a *second* one to give you economy on jobs not needing a lot of power?

In either case, stop and think about *quality* for a moment. A tractor of the one to two-plow size, such as the Oliver 60, becomes the main dependence of the one-tractor farmer. It is often asked to do, and does do, jobs which rightfully belong to its bigger brothers. On multiple tractor farms, the 60, because it is so handy, is often overworked.

These are the reasons why we take such special care in designing and building the Oliver 60. We guard its quality particularly, because we know a small tractor is abused more than a big one. The farmer who buys a small tractor needs *quality* even more.

Here are some of Oliver 60's *quality* features:

- ***Electric starter***
- ***4-cylinder Power Master high compression engine***
- ***Fuel Miser governor***
- ***Comfortable seat***
- ***Ample platform room***

Oliver 60 is available either in high clearance or row crop models.

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"FINEST IN FARM MACHINERY"

"How will you fight scab?"

Scab is always a problem, since its appearance is hard to predict. Keep your trees well covered during critical scab periods with an effective fungicide.

"Mike" Sulfur—the ideal noncaustic, wettable sulfur, more than 95% sulfur of microscopic fineness, has a place in your schedule. Many growers use it exclusively in combatting scab. Three pounds of lime per 100 gallons of water increase the efficiency of "Mike."

Dow Dry Lime-Sulfur—more caustic than "Mike", is preferred by many growers in pre-blossom sprays.

"Mike" Sulfur—liquid lime-sulfur combination in early applications is a good bet in bad scab seasons.

CLEAN FRUIT SELLS

Newest dormant insecticide and fungicide is DN-289—a liquid dinitro material tested since 1942. DN-289 has been effective against a variety of insects such as . . . Rosy Apple Aphid, Grain Aphid, Early Summer Green Aphid, Currant Aphid, Black Cherry Aphid, Mealy Plum Aphid, Viburnum Aphid, Eye-Spotted Bud Moth, Cherry Case-bearer, and Pear Psylla. DN-289 shows much promise against scale and European Red Mite. As a fungicide, it has been effective on sooty fungus on pears, and offers promise in orchard "floor" sprays against over-wintering Apple Scab.

A stable, brown solution readily miscible with water, DN-289 should *not* be used with oil. It should *not* be used on peaches. See your county agent or qualified supplier.

New: DN-289!

also available

Dowspray Dormant or DN-Dry Mix No. 2

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